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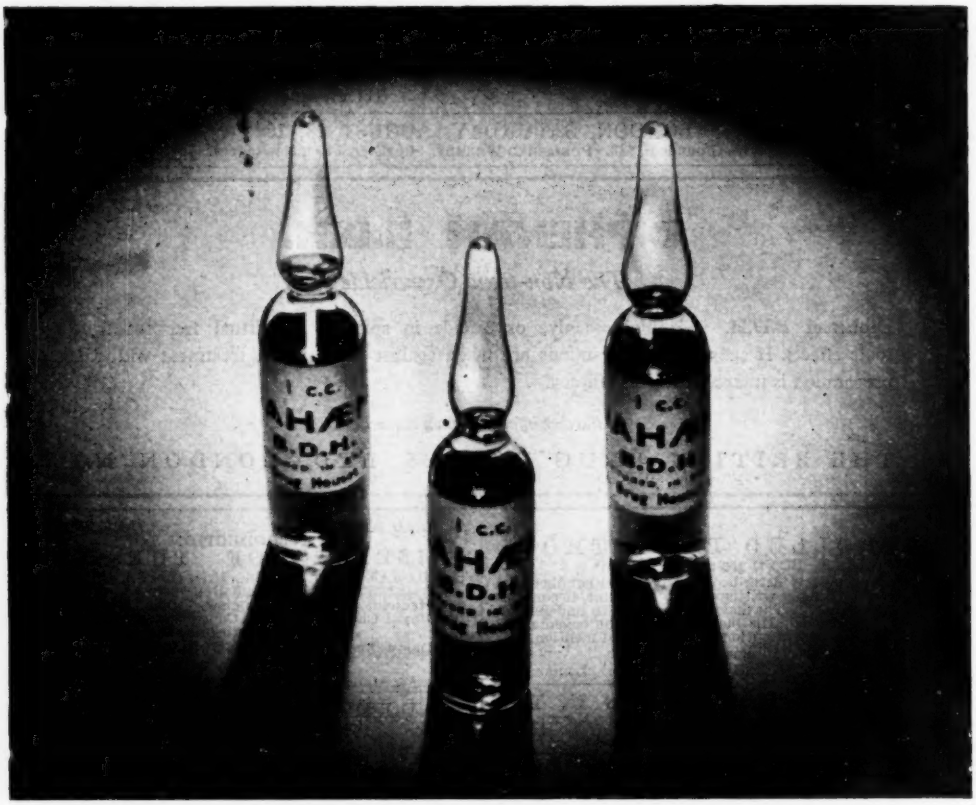

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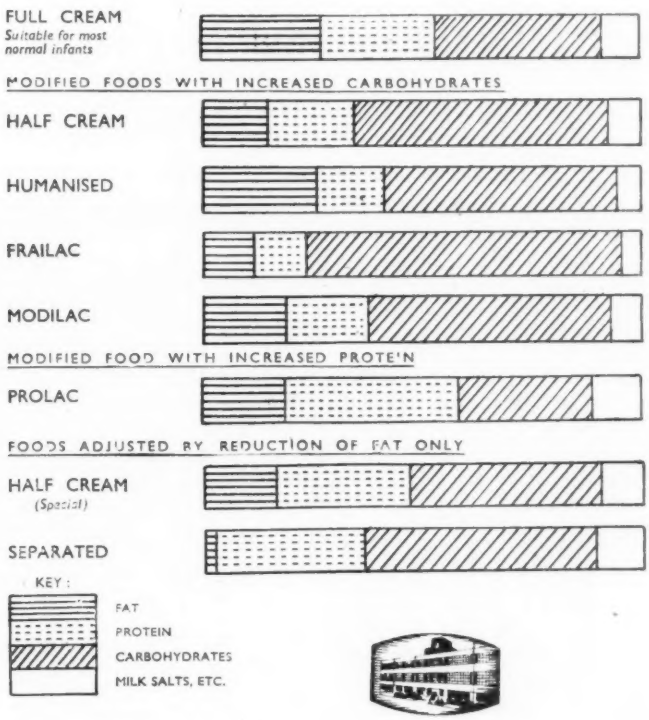

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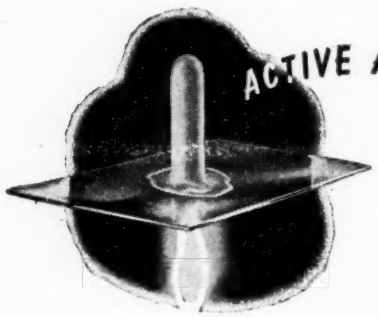

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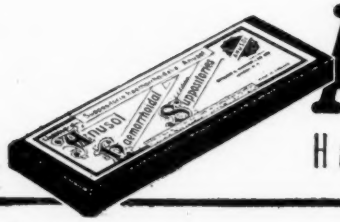

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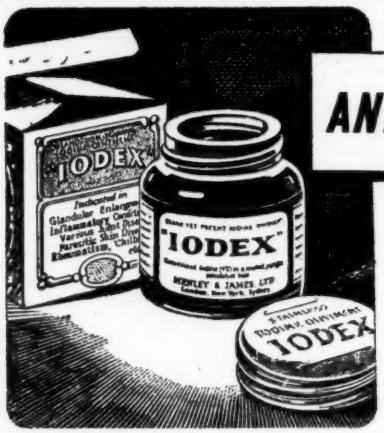

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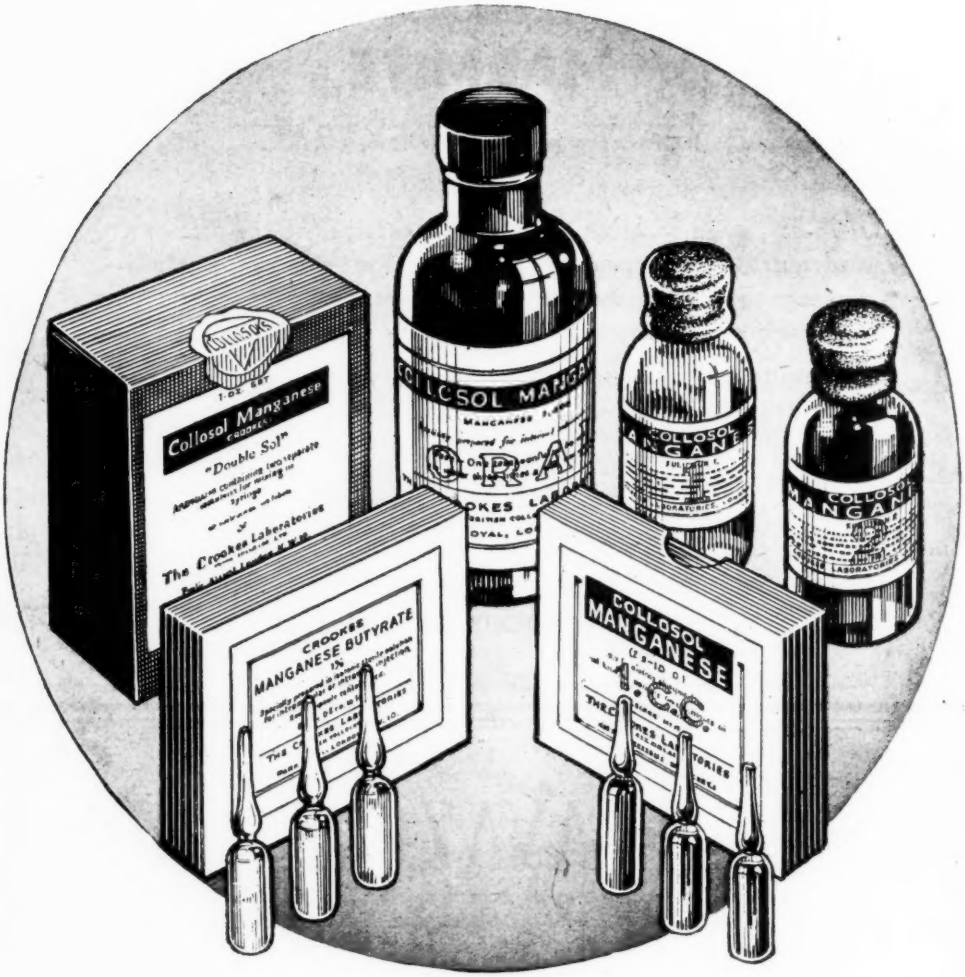

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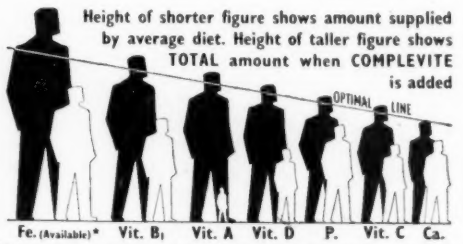

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NEUROSURGERY IN THE EASTERN THEATRE OF WAR

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R. C. S. DICK
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SURGERY in Eastern Bengal, Assam, and Burma, particularly a specialised branch like neurosurgery, is conditioned by the Indian background. The problems are not alone those of field surgery, of improvisation and mobility, but are those of climate, disease, and not the least, of education to modern thought and tempo of the Indian other ranks and followers. They are, in many ways, reminiscent of the surgical problems of last century, when treatises reflected much of the local atmosphere and conditions before the struggle had resolved itself into one of diagnosis and treatment carried out under conditions so uniformly good as rarely now to warrant mention.

One has, not only on the hospital staff but also on the staff of the many ancillary services, men recruited from villages all over India, some from isolated areas where much of the modern world remains a complete mystery. Every man has his job and limited sphere of activity, so that even the simplest procedures may involve a long chain of individuals and prejudices in a veritable "House that Jack built." One slip and not only does the procedure fail but considerable labour and time is involved in tracing the faulty link, a tiring process in the long humid summer of Eastern Bengal. The difficulty of training these men and impressing on them the urgency of all matters pertaining to neurosurgery, if lives are to be saved, may well be imagined. The most powerful agent is the stimulation of interest, and if this can be aroused and maintained by painstaking and careful training, the results are extremely gratifying. Many of our Indian personnel are now very skilled and valuable members of the Unit.

JUNGLE WARFARE

As the 1943 monsoon ended the Unit took up position at Imphal (see map). The majority of casualties occurred from fighting that took place in the difficult country of the Assam-Burma border, and later round Imphal itself. Some fifty miles west as the crow flies from the Chindwin, Imphal was, early in 1944, about the centre of the Assam-Burma front. It lies at the junction of two roads running southwards in a "V" to Tamu, 60 miles distant on the shorter and more easterly arm, and to Tiddim 130 miles on the longer westerly arm. These were mountain roads flanking the front, previously either rough tracks or mule paths. Imphal itself is 130 miles from Dimapur along a similar road rising at one point to over 6000 feet. From Dimapur a single metre-gauge railway formed the first part of the L of C to India, which was continued as a ferry-crossing over the Brahmaputra, of varying length depending on the route, a further journey on the metre-gauge, and finally over 200 miles of broad-gauge railway.

Along this difficult L of C, or on even longer rail-river journeys, went all the supplies to thousands of troops fighting on a front hundreds of miles long in the dense jungle-covered hills and mountains of the Assam-Burma border; and back along this weary trail came all the sick and wounded. The line of evacuation from one strong-point captured from the Japanese in March will be described in some detail because it reveals the nature of the country in which fighting was taking place and through which the retreating divisions fought their way to the defence of Imphal and the defeat of the Japanese invader. The wounded walked or were carried into a mobile surgical unit situated on the recently captured bunker position, one to two miles away from the enemy. The operating-theatre was a tent over a dug-out and the casualties, after treatment, were evacuated by an adjacent ADS. If stretcher cases they were carried down to the Yu river, and the first part of the journey was four miles upstream in an outboard motor-boat, which took a varying time, depending on the number of shallows encountered and how often the motors failed. Those fit enough had a much more uncomfortable journey over the hill on mule-back. The two routes met at an ADS situated in a chaung on the banks of the Yu, where the flood waters had left a wide shingle bed forming a clearing in the jungle. From here to Tamu, a mule ride of four to five miles over a track climbing 2000 feet was followed by a jeep ride of ten miles. For the stretcher case, a journey of ten hours or more, being punted, pushed, or pulled up a shallow river in little native boats, preceded medical attention.

It was hot in the middle of the day in March, and it was to become considerably hotter before the monsoon

broke. To obtain any shade was difficult, and food and water were not easy to provide for those unable to look after themselves. A night at the CCS near Tamu, and 60 miles by ambulance with long delays occasioned by important convoys coming up the road, meant that, even by arranging special ambulances to drive straight through to the Unit, the journey could never be completed in under 48 hours.

It should be realised that this was the easy route back along the beaten track. From other positions the line of evacuation might involve a long trek or indeed be non-existent. A sergeant with a bullet which, traversing the eye, had entered the skull through the optic foramen and was lying in the frontal lobe, had had to march 90 miles to get any more medical attention than the first field dressing; he eventually did very well.

AIR EVACUATION AND HEAD INJURY CENTRE

By early 1944 air supply was being developed on an increasing scale, and the evacuation of casualties in the returning planes became possible. A flare-up of fighting in the Arakan necessitated the establishment of a head injuries centre serving both fronts and this had of necessity to be placed on the focal point of air supply, irrespective of conditions and accommodation. To meet this the Unit moved by air to Comilla, Eastern Bengal, taking essential items of equipment and 18 patients all unfit to be evacuated by road; the treatment of casualties being flown in from both fronts was thus continued without any break. In view of the difficulties of operating on and nursing this type of case in bashas or tents during the Indian summer, accommodation was chosen in the brick buildings of a judge's court.

From this small beginning, and in the midst of an increasing amount of surgery, a Head Injury Centre was

built up. The association of an eye department of a British General Hospital proved indispensable and provided almost the ideal set-up. A dental department and burns centre completed the detachment. This centre not only received battle casualties but many cases had to be held to neurosurgical finality on account of the long distance to the neurosurgical centre at Poona and the very limited number of planes going in that direction.

The climate of Eastern Bengal, very different from that of the Imphal hills, is hot and steamy from May to November, and at times so humid that a temperature of 90° F made operating almost impossible, even with overhead fans. In wards with open doors and windows, approached by unmetalled roads and served by the contractor conservancy, dust and flies mitigated against primary wound healing, quite apart from "prickly heat" and lowering of resistance due to climate, chronic anæmia, malaria, or dysentery.

Fortunately the introduction to these conditions had not been a sudden one, for in 1942 the Unit had relieved the officers of a busy Indian general hospital at the end of the rush of sick and wounded from the Burma evacuation. This had provided valuable experience of tropical medicine and surgery in their most florid forms. Later the same year, it had been associated with the building-up of a neurosurgical and neurological centre in the United Provinces. Although the bulk of the surgery here had concerned peripheral nerve injuries the experience gained had proved of the greatest value, not only in training personnel but in assessing the requirements and essentials for a specialised surgical centre treating British and Indian patients in the changing conditions of the Indian seasons.

The line of evacuation was to become much shorter than one had thought possible. With the advance of the Japanese on Imphal and the cutting of the Manipur Road air transport became the only means of evacuation and was probably more effective and complete than on any other front, and this for two reasons—(1) casualties were occurring within a few miles of a general hospital in a defensive "box" adjoining the airstrip and had to be evacuated as soon as possible to make beds for the next day; (2) there was a regular daily service of aircraft, because this was the only way in for supplies and ammunition.

Later, following the relief of Imphal and the rapid advance of our troops into Burma, casualties came in small batches from widely scattered fronts.

TECHNIQUE

Views on technique are very liable to be coloured by a particular series of cases in a particular settings; the methods outlined in the following paragraphs are those which we eventually adopted for brain wounds in this theatre.

(1) *Early Wounds.*—Treatment has differed little from that outlined by Ascroft (1943). Catheter irrigation has been little used, not only because of the danger of washing infected debris into the ventricle or subarachnoid space, especially where the intracranial pressure is low, but because subsequent inspection of the track with retractors has shown it to be far less effective than one had imagined. For small entry wounds with deep tracks, osteoplastic flaps are now invariably turned and the adequate treatment of the whole track under vision is considered so important that we have not hesitated to enlarge the dural opening, the better to visualise the whole depth of the track, the sanctity of the subarachnoid space not being so necessary of preservation in the presence of such effective chemotherapeutic drugs as sulphamezathine.

The neurosurgical treatment of a brain track carried out within the first few days, and in the absence of gross infection, invariably meets with gratifying results. Sulpha drugs, with their effect on the CSF, and local penicillin render that success the more complete. The reason for this encouraging result probably lies in the fact that adequate treatment of a brain wound amounts to a more complete "wound excision" than can usually be obtained in other parts of the body—the bone is excised, contaminated and damaged brain softens and is easily removed, and the most contaminated of the tissues, the scalp, with its rich blood-supply, tends to heal well, even if excised and sutured late.

(2) *Infected Wounds.*—Late infected fungi should be treated conservatively, provided they are not associated with the uncommon "fungus abscess." Between the early and late case, however, the management of brain wounds arriving at varying delay periods, having had a variety of operative procedures forward, and exhibiting sepsis due to a variety of organisms, affords many problems. Particularly vicious are the cases infected with a mixture of anaerobic spore-bearers and gram-negative bacilli. They arrive ill, often within 24 hours of wounding, with diffluent foul-smelling brain being exuded from the scalp wound, which itself often appears clean and uninfected.

Any deep operative interference seems only to disseminate the infection, and treatment now is confined to laying the scalp widely open, enlarging the bone opening, and removing any superficial bone fragments which might hinder drainage. The wound is left open and is irrigated with proflavine, the organisms being largely penicillin-resistant. Diagnosis is made by the odour and the appearance of the brain—but the early changes may be slight and need to be looked for carefully. Some successes have followed this treatment.

In cases infected with penicillin-sensitive pyogens, with firm track walls, the whole depth is treated, but if there appears little reaction in the superficial part of the track the best results are obtained by doing the absolute minimum to ensure drainage. For, if spread of infection into the brain is absent (as evidenced by the patient's general condition), it is unlikely that this will occur if drainage is free and no operative procedures are carried out in the deeper parts of the track. The wisdom of leaving brain wounds open must be considered in all its aspects. Fungi have been easy to treat unless associated with brain infection, and closure in these cases might well have been fatal. There is a possibility, however, that this results in deeper scarring of the brain and it is not easy to judge from the appearance of the exposed cerebral tissues whether or not the time is ripe for secondary suture. Suture has been successful over damaged brain tissue, over areas of filmy transparent glial tissue (which develops very rapidly), and over brain from which sloughs have been peeled, depending on when the scalp appeared to be free from infection. One is impressed by the dense superficial scarring in the brain of cases re-explored, in which, during original healing, small areas of the wound remained moist for some time; the general conclusion has been reached that little is lost in not closing an infected wound.

(3) *Late Wounds.*—No re-exploration for indriven bone should be undertaken in the presence of an unhealed scalp wound unless there is evidence of deep infection. This is particularly pertinent here, where the presence of anaerobic and gram-negative bacilli may produce little reaction in the track walls and yet may widely invade the brain after exploration. Late operation for indriven bone may reveal small abscesses and glial cysts, but, most commonly, the bone is firmly embedded in glial scar and the operation resolves itself into one of scar excision en bloc, frequently into the ventricle.

(4) *Air Sinus and Brain Wounds.*—These are treated by immediate graft or pack, depending on the circumstances. Brain wounds involving the mastoid and middle ear are treated radically, all presenting mastoid cells being obliterated; if the dura cannot be closed by a living flap of temporal muscle on account of an infected brain track, the muscle is swung to isolate the mastoid and middle ear, and the scalp wound left open, in part at least.

(5) *Eye and Brain Wounds.*—Those due to small metallic fragments present few problems if the sinuses are not involved; the depth of the orbital soft tissues and the small amount, if any, of indriven bone, renders them unlikely to become infected. If due to large missiles, however, there is considerable destruction, often with involvement of air sinuses, and the decision has to be taken between the relative risks of immediate extensive operation and those of infection following incomplete minor procedures.

(6) *Wounds of Venous Sinuses.*—Five cases had large tears of the sagittal sinus at the level of, or behind, the parietal eminence—so large that a muscle graft could

not have been placed in position without obliterating the sinus. The clinical signs were those of the sinus syndrome (Holmes and Sargent 1915) with changes in consciousness, high papilloedema and in one case total blindness. Patties were introduced into each end of the sinus and if necessary into the lacuna, and sutures placed round the boundary of the tear. These were sewn through a patch of fascia lata cut to size and slid to position on the taut sutures as the patties were pulled out. In one case a complete tube of graft was placed in position and sutured to the falx below and to the margins of the torn sinus at each end with success. All the cases survived except one who died of a spreading thrombosis, probably due to an error in technique. The recovery of function was remarkable but it was interesting to observe that papilloedema and a raised pressure on lumbar puncture only slowly subsided over a period of weeks.

(7) *Bi-cortical Wounds.*—It was observed that when a metallic foreign body was seen on X ray to have either crossed the mid-line or crossed from one side of the cranium to the other, and was lying within 3 cm. or so of the inner table, it was probable that it had actually torn the cortex and even the dura on that side, and had bounced back. Both ends of these bi-cortical wounds must be explored, for not only may infection spread from the foreign body and the track contents (quite apart from the indriven bone) but intracerebral or subdural hæmorrhage may be present.

ANÆSTHESIA

Local anæsthesia is the method of choice; this is now generally agreed, but many of the patients are restless and uncoöperative, and the climate makes an hour under towels without moving an ordeal, even with sedation. Major Thornton has made some important observations on the effects of minor degrees of respiratory obstruction on the vaso-motor and respiratory centres. These are affected adversely, especially in the presence of brain damage, long before raised intracranial pressure and cyanosis appear, and in the absence of any recognisable evidence that obstruction is present (to be published). His observations suggest that no ordinary pattern of oral tube is safe. Local anæsthesia supplemented with light continuous 'Pentothal,' or oxygen and ether through a large intra-nasal tube has been most commonly used. It was observed that attention had to be paid to the position of the patient's neck to avoid mechanical obstruction to veins; in certain instances extension and rotation, often of a minor degree, would raise intracranial pressure.

CHEMOTHERAPY

As yet, insufficient cases have been treated with penicillin to produce any valuable data. Sulphamezathine has proved extremely effective in meningitis following penetrating wounds, gross brain damage with associated fulminating infection being almost the only cause of failure. The complete absence of serious complications, especially renal (of the first importance in the tropics), has led to its almost exclusive adoption. One great value of a non-toxic drug is that it may be given in massive dosage for indefinite periods, when there is difficulty in maintaining a high CSF level in the presence of a leak, and also during evacuation. In this climate sulphadiazine has produced renal complications in doses insufficient to control meningitis, and it is no longer used except prophylactically. Tablets not being available, sulphamezathine has always been given intravenously and the final dosage adopted in severe meningitis is 3 g. 4-hourly, starting with two initial doses of 6 g. Prophylactic treatment has been continued for 5 or 6 days. The duration of treatment in cases of meningitis has been determined by the number of polymorphs in the CSF; and in long-continued cases of meningitis, where basal arachnoiditis or ventricular loculus may be the cause of persistent re-infection, the drug has been given until the CSF was polymorph-free. Experiments by Harland and Goodall (to be published) have shown that a dosage of 3 g. 4-hourly produced a CSF level of approx. 10 mg. at the end of 12 hours, but that 6 g. for the first two doses, followed by 3 g. 4-hourly, produced a CSF level of 12–16 mg. within the first 12 hours, and 20–30 mg. at the end of 48 hours. The fall in level after the reduction of the dose varied, but was not excessive, and a level of 30 mg., once attained, could be maintained by dosage of 2 g. 4-hourly. These figures relate to the "free" portion; the amount of acetylation occurring in the CSF was found to be minimal. Observations are now being made to assess, if possible, the CSF level effective in preventing or treating meningitis, but this depends not only on the type of wound but on the infecting organisms. Several ventricular fistulæ (following the conservative treatment of large infected fungi) have been closed by swinging scalp flaps, and the CSF, previously turbid or hazy in spite of full doses of sulphamezathine, has become completely clear in 24–48 hours. There has been no serious toxic manifestation, and on no occasion has the drug had to be withheld.

NURSING AND AFTER-CARE

The nursing and after-care of a large number of serious head wounds involves many problems, not only of climate but of training the Indian personnel to care for the patient, and of organising the feeding and medical and ordnance supplies on a sufficient scale to meet the extra needs of such a set-up. The British ward holds between 40 to 50 cases, and the Indian 100 or more mixed Indian and African patients. One cannot speak too highly of the sisters and nurses, who toiled throughout the heat and taught the sepoys, the ward boys, the bheesties, and the sweepers each to play his allotted and important part in the after-treatment of these patients.

Posture is related to CSF pressure, except in the early stages before œdema has subsided or where a leak or fungus is present; these patients are therefore always nursed in the sitting position. But it is remarkable how patients with low pressures will improve on being nursed flat, and how deep cavities in the brain will fill out, so facilitating subsequent closure.

The temperature regulation of head cases requires the closest attention. During the monsoon, when the normal body temperature may rise to 100° F, air-conditioning of wards is the ideal, but failing this a high-roofed brick building with overhead fans and a through draught is the best. Fluid intake is kept in the region of 10 pints daily, and a sufficient amount of sodium chloride is given to produce a satisfactory level in the urine. All intravenous solutions must be pyrogen-free. Prophylactic antimalarial treatment is given as a routine to all cases. In spite of these precautions, temperatures of 101–103° were usual for a few days after severe head wounds, and any intercurrent disease, such as malaria, commonly produced temperatures up to 105°; only prompt institution of tepid sponging with table fans at the foot of the bed, and on occasions ice-water enemas, avoided hyperpyrexia.

Coincident tropical disease has to be watched for constantly; it may make all the difference to the swing of the pendulum in a desperate case—e.g., chronic anæmia, infective hepatitis, the dysenteries, and, most important of all, malaria. The last, especially in the Indian other rank, is very liable to become active as a result of any severe injury or operation, even though a course of antimalarial treatment may have recently been completed. A high maintained fever with increasing drowsiness and signs may just as likely be due to malaria as to complications of a deep brain wound, and will usually respond to intravenous quinine.

Constant care must be exercised to keep the standard of hygiene as high as possible, a difficult task in places where sanitation is ordinarily well-nigh non-existent, and one is dependent on locally employed cooks and sweepers for its observance.

RESULTS

During 1944, 598 head injuries were admitted; 443 of them were due to missiles and 202 of these had penetration of the dura and have been submitted to detailed analysis. In 68 cases (33%) associated injuries were present; 15% of the total had injuries to the eye. In 46 cases (22%) the brain track was open to the nasal sinuses or ear. The total number of deaths from all causes, including those admitted moribund and those

dying of intercurrent disease, was 47, giving a mortality-rate of 23·3%. The cause of death at various delay periods is shown in the table.

Series of cases at different times showed striking differences in mortality. Of the first 44 cases only 1 died, and that from meningitis 2 months after wounding. Of the last 44 cases (July to December) 15 died. Neither represents a true picture of the mortality: the first series occurred when the fighting was sporadic, when each case had maximal attention forward and during

DELAY IN OPERATION OR ADMISSION IN RELATIONSHIP TO MORTALITY AND CAUSE OF DEATH

Delay	No. of cases	Total deaths	Case-mortality %	Cause of death
Up to 48 hr.	73	20	27·39	16 from brain damage 2 from infection 1 from rupture carotid aneurysm 1 from effects gas-gangrene arm
48–72 hr.	28	3	10·74	2 from brain damage 1 from infection
3–7 days	53	17	32·07	11 from infection 5 from brain damage 1 from enteritis
Over 7 days	58	7	12·07	2 from infection 2 from brain damage 1 from phthisis 1 from anæmia 1 from infective hepatitis
Total	202	47	23·27	—

evacuation, and had to survive a 24–48 hours journey by ambulance. The second series occurred when our forces were spreading out far and wide into Burma, and when the monsoon was adding to the difficulties of air supply and evacuation, with the result that cases arrived, either desperately ill from severe brain damage as priority evacuations, or via longer routes, frequently ill from established brain infection in wounds which had appeared innocent and which had sometimes been missed. For though it may have been appreciated that wounds of the eye and face bear relationship to the dura, as buttock wounds do to the peritoneum, X-ray facilities, essential to diagnosis, were by no means always available forward. The last 44 cases were particularly severe wounds; on arrival 66% showed a well-marked disturbance of consciousness, 16% being comatose, 8% moribund, and 50% having deep neurological signs.

There was another factor—infection by anaerobic organisms was on the increase. The table shows the serious mortality from infection of cases arriving at the 3–7 days delay period. Early infection, frequently well established in the brain on arrival, has proved a great and increasing problem on this front (30% of the cases had gross sepsis on admission) and has been referred to under "Technique." The speed with which this infection may widely invade the white matter, especially in the presence of severe damage, the apparent absence of any but the slightest reaction in the brain, and its non-sensitivity to penicillin, render very difficult any effective measures to combat it. The incidence of infection was not reduced (it was actually increased) by excision and suture of the scalp at the earliest delay period possible in a forward area, until the delay in reaching the Unit exceeded 7 days.

Bacteriology is difficult where the laboratory is 5 miles away, where the heat rapidly dries and destroys organisms, and when those organisms that do grow frequently do not truly represent the relative invasive powers of the various bacteria present. Strains of *Bact. coli*, together with anaerobic spore-bearing organisms of the *Cl. welchii* group, have been isolated. In only one case was gas-production extensive enough to suggest invasion by *Cl. welchii*, and it seems likely that gram-negative bacilli associated with putrefactive organisms are largely responsible. Late infection has not provided the same problems, for of 118 brain tracks treated before penicillin was available, where the appearance of the wound permitted of scalp closure, only 5% subsequently showed evidence of brain infection.

Analysis of the cause of death shows that:

20 died of fatal brain wounds.
6 died of brain damage, not, as far as can be judged, necessarily fatal.
3 died of brain abscess.
2 died of meningitis.
11 died of suppurative encephalitis (5 established on admission).
5 died from causes unrelated to the head injury.

All patients arriving in deep coma were operated on as emergencies unless moribund, and the wound (especially if in the posterior fossa) was rapidly opened up. On several occasions a deep clot was evacuated with immediate improvement. Few eventually recovered, but those that did made it worth while. The value of a decompressive operation in cases with extensive brain damage, where by reason of small ventricles, or ventricular "loculation" produced by œdema, little can be gained by withdrawal of CSF, is worth consideration.

The prognosis in all wounds in which the track passes near vital centres is bad, but it was observed that where a metal foreign body was seen on X ray to be lying near the hypothalamus or mid-brain, the patient often died quite suddenly and after several days, suggesting thrombosis as the pathological process. That post-traumatic thrombosis does occur was demonstrated dramatically in those cases which developed a typical middle cerebral thrombosis following a deep (usually gutter) wound of the hemisphere. Small thromboses may well be the cause of a sudden temporary deterioration, often accompanied by Jacksonian twitching of face or limb, and may also be the cause of the occasional case in which a sudden unexpected and fatal deterioration occurs and at autopsy an area of softening is seen round a well-walled-off brain or abscess track.

A number of cases with what may be regarded as minor penetrating wounds have shown, at autopsy, lacerations and contusions unrelated to the track, and it was presumed that they frequently fell after being hit and sustained closed head injuries. This was quite consistent with the nature of the country and the position of Japanese bunkers on hill tops.

Patients with severe brain wounds are so sensitive to morphine, and the routine gr. ¼ to ½ for other casualties was so often given to head injuries, that intra-muscular paraldehyde, 8–10 c.cm., has been recommended as the only sedative to be given before evacuation.

Sufficiently accurate figures are not yet available to give any idea of disposal, but it has been observed that the slightest subjective weakness of a limb, barely detectable on examination, will render even the best soldier unfit for duty in category A. Several have been returned to their unit, but have invariably complained that the affected limb tired more readily, and so rendered them unable to undergo severe strain. One great problem of disposal following a penetrating brain wound is that of late epilepsy, which is almost impossible to predict with any degree of accuracy.

SUMMARY

A brief account is given of the country through which casualties from the Burma front were evacuated, and of the conditions and difficulties of running a head injuries centre in Eastern Bengal. An analysis of the results in 202 penetrating wounds due to missiles is made, and problems in treatment of special importance in this theatre of war are discussed.

This detachment of specialist centres was established at the direction of the DMS, ALFSEA, the DDMS, and Consultant Surgeon 14th Army. Our thanks are due to Colonel H. F. Humphreys and Colonel E. J. Parry, officers commanding General Hospitals, whose detachment this was at various times, for their readiness in providing our sometimes extensive needs and for permission to publish reports on cases treated; to Brigadier McAlpine for his encouragement and advice; and to the personnel of this Unit, who have worked continuously, clinically and administratively, to keep the Centre going.

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NICOTINAMIDE METHOCHLORIDE ELIMINATION TESTS

ON NORMAL AND NICOTINAMIDE-DEFICIENT PERSONS

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THE development of a satisfactory saturation test for the assessment of the nicotinamide or nicotinic acid state of the human body has proved difficult. This is mainly due to the fact that nicotinamide and nicotinic acid, unlike aneurine, riboflavine, or ascorbic acid, are not eliminated as such in appreciable amounts. Nevertheless nicotinic acid saturation tests were carried out based on the urinary elimination of "nicotinic acid" determined by varying methods after more or less intense acid or alkaline hydrolysis (Kühnau 1939, Swaminathan 1939, Harris and Raymond 1939, Briggs 1941).

Since trigonelline had been found to be eliminated in increased amounts after dosage with nicotinic acid in dogs (Ackermann 1913) and in man (Linneweh and Reinwein 1932a and b), attempts were made to base saturation tests on the elimination of this substance in human urine (Field et al. 1941, Perlzweig et al. 1941, Kodicek and Wang 1941). The finding by Najjar and Wood (1941) of a fluorescent pigment which can be obtained from normal urine and in increased amounts from urine of persons treated with nicotinamide or related compounds led to the observation that nicotinamide methochloride is an important metabolite of these compounds (Huff and Perlzweig 1943a and b, Ellinger and Coulson 1943, Coulson and Ellinger 1943), and the "trigonelline" found in urine, particularly after nicotinamide intake, was shown to be probably nicotinamide methochloride (Sarett 1943, Huff and Perlzweig 1943b) apart from the trigonelline of dietary origin.

Quantitative methods for the estimation of nicotinamide methochloride (Ellinger et al. 1942, Coulson et al. 1942, 1944, Huff and Perlzweig 1943c, Najjar 1944) made it possible to develop tests for the elimination of ingested nicotinamide (Holt and Najjar 1943, Ellinger and Coulson 1944, Roberts and Najjar 1944, Coulson et al. 1945). Ruffin, Cayer, and Perlzweig (1944) examined the nicotinamide methochloride elimination after single doses of nicotinamide in normal people and people showing clinical signs of B-vitamin deficiencies, and found significantly higher responses by the former than the latter. The present paper reports a series of nicotinamide "saturation tests" carried out with persons suffering from various types and degrees of nicotinamide deficiencies and compares these results with the figures obtained from a series of normal controls investigated under comparable experimental conditions.

EXPERIMENTAL

The elimination tests were carried out with 11 female and 1 male patient believed on clinical grounds to be suffering from nicotinamide deficiencies, during March, June, and July, 1944. Ten of these were inmates of West Park Hospital, Epsom, and 2 came from general hospitals. Seven physically fit inmates of West Park Hospital who served as controls were examined during January and February, 1945.

The patients and some of the controls were kept in bed during the test, but some of the controls, who in the ordinary way were actively employed with hard work, were allowed to perform light tasks in the ward. Twenty-four-hour urine specimens were collected from each person for 8 days; during the first 3 days of the test no extradietary nicotinamide was given, while on the remaining 5 days 100 mg. nicotinamide was given by mouth every morning during breakfast. All the subjects received the usual hospital diet.

The daily urine volume was measured, and the daily urinary nicotinamide methochloride elimination was determined by the method of Coulson, Ellinger, and Holden (1944). This 8-day elimination test had sometimes to be modified in individual cases owing to incontinence, enemy interference, or other reasons beyond our control. The Beck, Ellinger, and Spies (1937) test was carried out once on the urine specimens of all patients. If positive it indicates increased urinary elimination of abnormal pigments—porphyrins (Beck, Ellinger, and Spies 1937) or possibly indirubin (Watson 1938). It was positive in most fresh cases of pellagra observed in Yugoslavia and Egypt but became negative when pellagrous symptoms were fully developed (Ellinger and Dojmi 1935a and b, Ellinger, Hassan, and Taha 1937). It should be noted that during the testing period of the first 5 controls in January, 1945, the weather was unusually cold.

RESULTS

The daily nicotinamide methochloride elimination of the controls and the cases of nicotinamide deficiency is shown in the table. The low values of 1 mg. or less per day (assuming an average daily urine volume of 1500 ml.) are maximum values and fairly inaccurate with errors of 10–25%; between 1 and 1·5 mg. per day the error is about 10%; and above 1·5 mg. per day the error amounts to 5%. No significance can therefore be attributed to values below 1 mg. per day (cf. Coulson et al. 1944). The Beck, Ellinger, and Spies test was negative in all patients.

DISCUSSION

The daily test dose of 100 mg. of nicotinamide was chosen for the following reasons. The small doses of nicotinamide obtained from the daily food intake—in the neighbourhood of 10 mg.—give no appreciable response, as has been shown by Ellinger and Coulson (1944) and confirmed in people kept on entirely controlled diets by Mickelsen and Erickson (1944, 1945). This can be easily explained by the fact that this dose of nicotinamide is almost negligible compared with that released by the intestinal flora (Ellinger, Coulson, and Benesch 1944, Ellinger, Benesch, and Kay 1945). The response to 50 mg. of nicotinamide is still relatively small and the effect of a dose of more than 100 mg. lasts too long. A single test dose of 500 mg. nicotinamide given 4 hours before the collection of a 24-hour urine sample was used by Ruffin, Cayer, and Perlzweig (1944).

"Saturation" tests for nicotinamide have already been carried out by Coulson, Ellinger, and Smart (1945). Since the persons who underwent these tests were either airmen on duty or civilians at work, only short tests covering periods up to 7 hours could be performed. Holt and Najjar (1943) based their tests on a 4-hour elimination. From the investigations of Ellinger and Coulson (1944) it is known that the nicotinamide methochloride elimination after ingestion of 100 mg. nicotinamide returns to normal after 15 hours. Since in the present work the tests were carried out on hospital patients, a 24-hour test was chosen to overcome individual fluctuations in elimination.

From the table it is evident that there were considerable individual differences in the daily nicotinamide output of the normal controls as well as the nicotinamide-deficient persons. This agrees with the findings of Huff and Perlzweig (1943b), Ellinger and Coulson (1944), Ruffin, Cayer, and Perlzweig (1944), and Coulson, Ellinger, and Smart (1945). During the first 3 days, when no extra nicotinamide was given, a well-marked difference is apparent in the average daily output of the controls as compared with that of the deficient cases. This is in agreement with earlier findings of Ellinger, Benesch, and Kay (1944). The daily output was also higher in the 3 normal males (8·74 mg.) than in the 5 females of the same group (5·40 mg.).

The response to the ingestion of 100 mg. nicotinamide also varied considerably from person to person in both groups. Consideration of the control group reveals a recovery varying from 7·85% to 25·5% of the test dose on the first day of dosing, with an average of 13·4%. It can further be seen that the recovery on the following 4 days of dosing did not show an identical trend in the individual subjects, cases 4 and 5 showing a definite upward trend, case 6 exhibiting a peak on the third day, and the other cases remaining more or less constant. The average for all 7 controls, however, clearly gave the picture of a steady rise from the first to the fifth day of dosing.

The response of the nicotinamide-deficient patients to the ingestion of the 100 mg. nicotinamide test dose was far

smaller than in the controls. In these patients the response to the test on the first day gave a range from only 0·62% to 4·75%, with an average of 2·49%.

The individual values of the nicotinamide methochloride elimination by the nicotinamide-deficient persons corresponded on the whole very well with their clinical conditions. Nos. 8, 9, and 10 were the most acute cases investigated; they showed a very low basic elimination of nicotinamide methochloride as well as a greatly diminished response to dosage with nicotinamide. Cases 11 and 12 were also investigated during an acute, if somewhat milder, attack of pellagra. Biochemically these patients presented a similar picture to cases 8 to 10, although the basic levels and the responses are higher. One of the suspected pellagrins (no. 16) shows biochemically a picture approaching that of a normal individual, while the others (nos. 13, 14, and 15) resembled very closely the acute cases of pellagra. It is interesting to note that the chronic pellagrin (no. 17), who had had a very severe attack two years previously, but was practically without symptoms during this investigation, apart from an acute loss of weight, gave a somewhat better response than the acute pellagrins. Cases which were described as multiple vitamin-B deficiency (no. 18) and as alcoholic vitamin-B deficiency (no. 19) can from their saturation tests be regarded as subnormal. The absence of a positive Beck, Ellinger, and Spies test in any of the patients showed that no early stages of pellagra were examined.

On the average the elimination peak reached in the deficient patients is much lower than in the controls and the response tends to fall towards the end of the dosing period. This could conceivably be due to the influence of other factors apart from the patients' deficient status with regard to nicotinamide. The methylating mechanism which was found to be in the liver by Perlzweig, Bernheim, and Bernheim (1943) might be damaged; liver damage in pellagrins was already suspected by Beck, Ellinger, and Spies (1937) and described by Gillman and Gillman (1944); and altered nicotinamide saturation curves were observed in certain liver diseases (Ellinger and Benesch, unpublished data).

It should be stressed that the work reported here is of a preliminary nature and that no general conclusions can be drawn before considerably more material has been collected. The fact that the controls were tested in January and February, and most of the patients in June and July, might slightly influence the result since small seasonal variations in nicotinamide elimination have been observed (Ellinger and Coulson 1944). Two points in particular are bound to play an important part in influencing the whole picture—(*a*) the synthetic activities of the intestinal flora which have been shown to vary greatly from individual to individual (Ellinger, Coulson, and Benesch 1944, Ellinger, Benesch, and Kay 1945); (*b*) the methylating efficiency of the body, probably of the liver (Perlzweig, Bernheim, and Bernheim 1943), which will itself be undoubtedly influenced not only by the available methyl groups but also by a number of other factors (Ellinger and Coulson 1944); (*c*) interference with absorption may also play its part in modifying the response to the oral dosage. Subject to these qualifications, it can be stated with some confidence that the nicotinamide methochloride elimination test described above can yield useful information on the nicotinamide status of the human organism.

SUMMARY

Nicotinamide methochloride elimination tests on 12 nicotinamide deficient and 7 normal persons before and during administration of nicotinamide are reported.

The results bear a close relation to the clinical picture.

Clinical Addendum

The 7 control cases chosen for the saturation test were all in satisfactory physical health. The following are brief clinical notes on the 12 deficient cases.

CASE 8.—Female, aged 59, admitted 1934. A deteriorated and demented epileptic. Physical health moderate, average weight 7½ stone until 1941 when it fell ¾ st. In July, 1941, the front of both legs were inflamed and blistered after exposure to sun. In February, 1944, the fits increased in frequency and she sank into a resistive stuperose state, being difficult to feed. In June, after exposure to sun, she developed a severe dermatitis on the front of both legs and the back of her hands and neck. No glossitis or stomatitis. Wt. (April, 1944) 6 st. 4 lb.

CASE 9.—Female, aged 38, admitted 1933. Schizophrenia. Average wt. 9½ st. In spring, 1941, she lost 1½ st. In August, 1942, had loose stools with fever, ? dysentery. In June, 1943, developed severe "sunburn" of face, backs of hands, and front of legs. (Wt. then 6¾ st.) In May, 1944, developed a severe and symmetrical dermatitis on back of wrist and hands, while the back of her neck was deeply pigmented. No glossitis or diarrhœa. Wt. June, 1944, 6 st. 4 lb. Skin lesions improved with nicotinamide.

CASE 10.*—Female, aged 57, admitted 1936 with history of "nervous breakdowns for years." Subject to periods of excitement when she was very difficult with food. Admission wt. 7 st. 6 lb. In March, 1941, lost 1 st. and developed pigmentation of backs of hands. In June, 1941, tottery on her feet; in July forearms were blistered with "sunburn." Pellagra diagnosed. In July, 1942, the rash recurred over the back of forearms, hands, face, and neck. Maintenance nicotinic acid continued throughout the summer of 1943, when she did not develop skin lesions. In April, 1944, the nicotinic acid having been discontinued, again developed rash on backs of hands; in May, loose stools. In June, 1944, had severe dermatitis on back of both hands, pigmentation on back of neck and somewhat on face, and thickened pigmented patches on forearms. Some glossitis. Wt. 6 st. 7 lb.

CASE 11.—Female, aged 71, admitted 1919. Manic depressive insanity. Average weight 11 st. Pellagrous symptoms were observed in August, 1932, and May, 1934. Subsequently weight and general state improved and no symptoms of deficiency disease were noted until November, 1942, when she developed acute stomatitis and vaginitis with erythema on the knuckles. Early in 1943 her weight was only 5 st. Careful feeding and nicotinic acid prescribed. Improved. In January, 1944, wt. 8 st. Nicotinic acid was discontinued in summer of 1943 and no pellagrous rash was noted that year. In June, 1944, when her weight had fallen ½ st., she developed an acute dermatitis on backs of both hands. Flaky and pigmented scales were present on front of ankles and on forehead.

CASE 12.*—Female, aged 62, admitted 1923. A paraphrenic. Physical health satisfactory until June, 1942, when she became difficult with her food and lost 1 st. in weight. In July, 1942, a pellagrous rash appeared on backs of hands, forearms, front of legs, dorsum of feet, and buttocks; face deeply pigmented. Glossitis present. Responded well to adequate feeding and nicotinic acid. Maintenance nicotinic acid continued until July, 1943. In June, 1944, there was some pigmentation over forearms, backs of hands, front of legs, and ankles. No loss of weight.

CASE 13.—Female, aged 64, admitted 1930, with severe depression. Wt. 7 st. 12 lb. During first year in hospital she resisted being fed owing to delusions that she was too wicked to eat. Weight dropped to 4 st. 11½ lb. in May, 1931. Occasional epileptiform seizures. Her physical state subsequently improved and weight increased to 7–8 st. In December, 1940, developed acute enteritis, ? dysentery. In September, 1941, developed tuberculosis at right apex. In June, 1944, skin on backs of both forearms was darkly pigmented and thickened; back of neck was pigmented and the facial skin scaly. Wt. 5¾ st. Tuberculous lesion not active. No epileptiform seizures after 1931.

CASE 14.—Female, aged ? 60, admitted July, 1944. On admission appeared confused and mental picture suggested organic dementia. Wt. 8 st. Deep brown pigmentation on face, neck, backs of hands, forearms, and slightly on front of abdomen. Skin on front of ankles thickened. No glossitis or diarrhœa.

CASE 15.—Female, aged 48, admitted 1935, with "depression." Obese on admission, but lost weight in 1936. In 1940 and 1941 weight fell from 12 st. to 9 st. 12 lb. In December, 1940, had relaxed stools with fever, probably dysentery. For past 2 years has suffered from severe recurrent infections involving the skin of lower limbs, probably streptococcal. In June, 1944, skin on front of both legs, dorsum of feet, and back of both forearms was thickened and pigmented. Wt. 9½ st.

CASE 16.—Female, aged 55, admitted 1934, with "melancholia." Emaciated on admission (wt. 5 st. 7 lb.). Pulmonary tuberculosis suspected. Weight rose in 1935 to 7½ st. Her general health remained indifferent and in 1941 weight fell to 6 st. In March, 1942, had an attack of acute dysentery (Flexner). In June, 1942, the front of both legs inflamed after exposure to the sun. Relaxed stools occasionally. In June, 1944, slight pigmentation and thickening of skin on backs of hands.

DAILY URINARY NICOTINAMIDE METHOCHLORIDE ELIMINATION OF 7 PHYSICALLY FIT AND 12 NICOTINAMIDE-DEFICENT PERSONS BEFORE AND DURING DAILY DOSAGE WITH 100 MG. OF NICOTINAMIDE

Subject	Sex	Age (yr.)	Weight (lb.)	Physical diagnosis	Daily nicotinamide methochloride output (mg.)									Recovery of nicotinamide as % of ingested* on dosing days				
					During predosing days				During dosing days									
					1st	2nd	3rd	Av.	1st	2nd	3rd	4th	5th	1st	2nd	3rd	4th	5th
1	M	39	141	Normal	11·4	8·0	8·3	9·23	30·0	33·3	32·0	27·6	38·2	14·65	17·05	16·09	12·90	20·55
2	M	33	210	,,	12·4	7·3	7·8	9·17	29·6	30·7	30·0	25·6	23·5	14·48	15·25	14·78	11·69	10·12
3	M	24	138	,,	8·9	6·4	8·2	7·83	44·0	40·0	38·3	40·7	..	25·58	23·15	21·57	23·18	..
4	F	40	125	,,	6·8	8·3	7·2	7·43	24·9	24·7	25·8	37·4	50·5	12·38	12·22	13·00	21·20	30·55
5	F	23	105	,,	8·5	9·0	4·5	7·33	20·4	26·8	33·5	31·7	40·0	9·26	13·77	18·50	17·22	23·12
6	F	54	138	,,	2·9	2·8	5·6	3·77	14·8	19·1	32·2	25·9	24·7	7·85	11·88	20·18	15·61	14·82
7	F	33	98	,,	..	2·7	2·9	2·80	16·6	20·4	(14·9)	20·0	18·8	9·76	12·39	8·55	12·38	11·32
Average ..		..	..	.. ..	8·25	6·36	6·36	6·80	25·8	27·9	29·5	29·7	32·5	13·43	15·32	16·15	16·32	17·05
8	F	59	88	Acute pellagra (? recurrent)	0·84	0·69	0·68	0·74	4·12	..	..	..	..	2·39	..	..	..	..
9	F	38	88	Acute pellagra (? recurrent)	1·80	1·33	1·49	1·54	3·94	5·58	9·96	5·63	6·10	1·70	2·90	5·95	2·91	3·23
10	F	57	91	Acute pellagra (recurrent)	1·54	1·26	2·48	1·76	6·93	8·08	12·30	8·94	5·82	2·95	4·46	7·45	4·24	2·88
11	F	71	106	Mild pellagra (recurrent)	2·12	1·66	1·28	1·69	3·12	7·58	6·70	9·78	14·82	1·01	4·16	3·55	5·72	9·31
12	F	62	113	Mild pellagra (recurrent)	1·25	1·19	1·22	1·22	6·46	12·45	8·00	10·18	9·30	3·78	7·96	4·80	6·35	5·72
13	F	64	82	Suspected pellagra	2·49	2·24	2·79	2·51	6·34	4·86	6·65	6·42	4·82	2·71	1·67	2·94	2·77	1·64
14	F	60 ?	112	Suspected pellagra	1·60	1·67	1·80	1·69	6·75	4·38	13·28	12·69	..	3·58	1·97	8·20	7·80	..
15	F	48	133·5	Suspected pellagra	1·60	3·84	2·33	2·59	5·52	6·26	8·15	8·80	7·60	2·08	2·60	3·94	4·41	3·55
16	F	55	86	Suspected pellagra	3·18	2·06	..	2·62	9·34	5·45	11·90	15·20	6·80	4·75	2·00	6·56	8·94	2·97
17	F	43	98	Pellagra 2 yr. before	3·00	4·46	3·34	3·60	5·78	5·10	10·22	9·34	9·34	1·54	1·06	4·67	4·14	4·14
18	M	72	?	Multiple vit.-B defy †	4·40	4·80	2·90	4·03	4·90	8·20	8·20	..	..	0·62	2·94	2·94	..	..
19	F	?	?	Vit.-B defy on alcoholic basis	2·08	2·04	1·15	1·76	5·66	9·71	..	..	..	2·72	5·64	..	..	..
Average ..		..	..	.. ..	2·16	2·27	1·95	2·15	5·72	7·06	9·54	9·66	8·07	2·49	3·49	5·10	5·26	4·18

* mg. NM output − mg. aver. predosing NM output / mg. N ingested × 100 × mol. wt. N. / mol. wt. NM

N = nicotinamide. NM = nicotinamide methochloride.

† As described by Cleckley, Sydenstricker, and Goeslin (1939), and Gottlieb (1944).

CASE 17.*—Female, aged 43, admitted 1939. Schizophrenic. Weight over 8 st. in 1940, but fell in 1941 to under 6 st. General health poor; had bouts of diarrhœa and recurrent focal skin infections. In May, 1942, developed erythema on face and backs of hands, and mild stomatitis. Treated with nicotinic acid until April, 1943; improved considerably and in May, 1944, her weight reached 9 st. A sharp fall of over 1 st. in weight then occurred but patient showed no signs of a recrudescence of pellagra.

CASE 18.—Male, aged 72, admitted to Northern Hospital Dec. 28, 1943, 10 days after falling and fracturing a rib. Physical condition appeared fairly good for his age but was emphysematous. Mentally confused, unable to express himself clearly, getting in and out of bed, and complaining of worrying dreams. On Feb. 15, 1944, had well-marked glossitis and stomatitis and possibly some cheilosis. No grasping or sucking reflexes. No nystagmus. Pupillary reflexes to light and accommodation poor. No gross polyneuropathy but probably some general diminution of touch sensation over peripheral parts of limbs. Treated with a large dose of nicotinic acid and improved clinically. The saturation test was performed shortly afterwards.

CASE 19.—Female. Case-papers lost through enemy action.

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* Reported by Hardwick (1943).

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POLYARTERITIS NODOSA
DEVELOPING DURING ANTISYPHILITIC TREATMENT

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THIS case of polyarteritis (periarteritis) nodosa is reported not only because the diagnosis completely eluded the considerable number of those who saw and treated the patient during his ten months illness, and remained unknown until tissues obtained at autopsy were examined microscopically, but also because of the apparent relationship of the pathological changes to hypersensitivity developing during antisyphilitic treatment with organic arsenicals.

CLINICAL SUMMARY

An airman, aged 36, was first seen at a RAF venereal diseases centre on Dec. 15, 1943, with a history of a relapsing nodular cutaneous lesion on the right buttock present intermittently for 15 months. In addition to the skin lesion he showed snail-track ulcers in the mouth and generalised enlargement of superficial lymph-glands. The lesions were considered characteristic of syphilis, and this was supported by repeated strongly positive blood Wassermann and Kahn reactions. The cerebrospinal fluid was entirely normal, with a negative WR. The patient was well in himself, and a normal cardiac outline was found on radiological examination.

After two injections of bismuth, and potassium iodide by mouth for 6 days, he was given a first injection of 0·15 g. of neoarsphenamine on Dec. 23. This dose was repeated on Jan. 11, 1944, and on the 18th he was given 0·3 g. On this occasion he reported that 3 days after the first, and 4 days after the second injection he felt ill, and "blacked out." After the third injection he had a severe headache followed by two days' diarrhœa. On Jan. 25 physical examination showed a blood-pressure of 155/100 mm. Hg and an accentuated aortic second sound. Arsenotherapy was discontinued and he was given weekly bismuth until Feb. 28, with rapid clearing of the skin lesion. On March 27 the blood still showed positive WR and Kahn reactions and a further course of bismuth was started. On April 30 however, 15 weeks after his last injection of neoarsphenamine, he complained of severe pain and stiffness in his joints; he had a slight pyrexia, and his urine showed a strongly positive Ehrlich's test for urobilinogen. This condition, diagnosed as pre-icteric arsenical intoxication, rapidly cleared in hospital with salicylates and glucose, and he returned to duty on May 17. During the ensuing 5 weeks he complained of occasional joint pains when attending for his weekly bismuth injections.

On June 21, 1944, he had severe pain in both feet, worse on the left, where it spread up the calf. This increased for a week, and on the 29th he awoke with left-sided foot-drop and similar though slighter weakness on the right. Still well in himself, he was readmitted to hospital, and seen by a neurologist, who considered that his history of "root pains," his asymmetrically bilateral foot-drop with absent ankle-jerks, well-defined segmental sensory impairment over the fourth and fifth lumbar areas on the right and the fourth and fifth lumbar and first sacral areas on the left, without muscle tenderness or sphincter impairment, indicating meningovascular syphilis affecting the cauda equina. He advised intensive antisyphilitic treatment, and in view of this it was decided to try mapharside. On July 1 and 6 he was given 0·04 and 0·06 g. After the first injection he complained of nausea and headache, and after the second a similar reaction was accompanied by fever (100·5° F). By July 13, however, there was some improvement in the right foot, and on this and the two succeeding days he was given test doses of mapharside 0·006 g. (followed by headache without fever), 0·012 g. (headache, temp. 100°), and 0·03 g. (severe reaction, temp. 101°). These efforts to eliminate toxic reactions by graduated dosage having failed, he was given two doses (0·3 and 0·45 g.) of sulpharsphenamine on July 18 and 21. After the second injection he said his feet were weaker and more painful.

From July 24 until his death on Oct. 6 he showed an evening pyrexia varying between 100° and 101°, his temperature in the mornings being usually normal. Clinically his condition began to deteriorate. The signs in the legs showed no material change except for progressive wasting below the knee, but he had intermittent severe pains down the back of the legs, unresponsive to codeine or vitamin B, and without definite tenderness. The CSF remained entirely normal; X-ray examination of chest, pelvis, and sacrum revealed no abnormality, though the lumbar spine showed early osteo-arthritis. The erythrocyte-sedimentation rate (ESR) was 55 mm. in 1 hr. (Westergren). The white blood-cell counts are shown below.

Date	Total per c.mm.	Differential count			
		Poly. (%)	Lymph. (%)	Mono. (%)	Eosin. (%)
July 26 ..	14,000	67·5	14·5	8	10
Aug. 17 ..	18,400	76	12	8	4
Aug. 30 ..	33,800	78	20	2	0
Sept. 2 ..	46,000	85	5	9·5	0
Sept. 5 ..	22,400	66	16·5	15	2·5
Sept. 16 ..	15,000	68	21	10	1
Oct. 6 ..	35,000	94	1·5	4·5	0

By the first week in August the patient became for the first time really unwell. He complained of failure of appetite and abdominal discomfort with occasional attacks of colic and diarrhœa. The stools were examined and nothing abnormal found. On Aug. 6 he was seen by two visiting neurologists, who thought the nervous signs indicated a bilateral lumbosacral radiculitis, and discussed a possible origin in arsenical intoxication, despite the rarity of peripheral nervous sequelæ to the administration of organic arsenicals.

On Aug. 12 he complained of pains down both legs more severe than ever before, and for a week was unable to move his feet at all. The sensory loss in the right leg extended to involve the first and second sacral areas. The CSF remained normal, electrical testing showed reaction of degeneration in all muscles below the knees, and the ESR rose to 88 mm. His abdominal symptoms continued, without any positive signs. On the 17th he complained of pain over the left eye, vomited, and was observed to have a contracted but normally reacting left pupil. In the next 4 days this pupil became widely dilated, retaining its normal reactions, and remained thus until death. This was felt to be a further indication of widespread involvement of the neuraxis, unlikely to be related to arsenic and possibly syphilitic in nature, the blood WR remaining strongly positive. It was decided to give a course of penicillin, and from Sept. 19 to 24 he was given 50,000 units five-hourly, making 1,200,000 units in all, without any clinical improvement. On Sept. 22 he complained of numbness in the distribution of the right ulnar nerve, and examination revealed impairment of superficial sensation in this area, without motor weakness.

At this time he was pyrexial, wasting, and obviously ill, with a blood-pressure of 160/100, a doughy variably tender abdomen, and the diffuse neurological findings noted above. The urine was normal, and the blood-urea 27 mg. per 100 c.cm. The fundi showed no pathological changes. The leucocytosis and the raised ESR persisted, without any evident infective focus, and the positive blood WR was the only apparent ætiological signpost.

The case was now peculiarly difficult. While it was evident that the total picture could not be accounted for by syphilis, syphilitic infection was present, was possibly related to the neurological findings, and had never been treated with an adequate course of arsenicals. The venereologists under whose care the patient remained were sceptical as to the relation of his symptoms to the syphilitic infection, and reluctant to administer further arsenicals. No alternative pathology or treatment was suggested by the physicians and neurologists who made repeated examinations of the patient, but there was a record of clinical improvement after mapharside (July 13), so it was reluctantly decided to make a further cautious trial of this drug.

At 3 PM on Aug. 24 he was given 0·04 g. of mapharside. At 4.30 PM he complained of nausea and an exacerbation of abdominal pain, and vomited ¾ pint of blood. He was transferred to a general medical ward, his condition remaining good. The next day a further melæna occurred, the blood-pressure falling to 100/50, and the hæmoglobin from 70% to 50%. He was given 1¼ pints of blood.

From this episode he made a good recovery, but remained ill, anorexic, pyrexial, and with unchanged nervous and general findings. The blood-pressure soon recovered, remaining about 170/100, and the stools became free of occult blood within 3 weeks. He had intermittent general abdominal pain, including a sharp attack on Sept. 1, associated with hiccup, but there was no rigidity, palpable mass, or local tenderness, nor any evidence in support of a suggested diagnosis of malignant disease.

At this stage the diagnosis of polyarteritis nodosa was seriously considered by the physician in charge of the case, and was rejected because repeated physical examinations by visiting and staff physicians never revealed palpable nodules, the fundi remained normal, the urine had never shown albumin on routine testing or blood on microscopy (carried out several times at this stage), and there was no significant eosinophilia except in the first count. The presence of known syphilis impossible of adequate treatment was no doubt another factor weighing against a correct diagnosis on grounds which at the time must have appeared even slenderer than in retrospect.

A barium meal showed no abnormal findings on Oct. 1. On Oct. 5 the patient complained of severe lower abdominal pain and vomited several times. Next day his abdomen was distended. Partial obstruction of the large bowel was diagnosed by a surgeon, who advised intravenous saline and acetylcholine, to be followed by laparotomy if these measures failed. The same day the patient collapsed and died.

SUMMARY OF AUTOPSY FINDINGS

The only gross findings were a purulent adhesive peritonitis associated with the recent perforation of a shallow acute "peptic" ulcer ¼ inch in diameter and 3 inches from the pylorus, with mild left ventricular hypertrophy, and infarcts in liver and kidneys.

Histological examination revealed typical changes of acute and subacute polyarteritis nodosa, affecting arterioles in the heart, kidneys, adrenals, spleen, pancreas, stomach and intestine, and sciatic nerve; with microscopic infarcts in adrenals, myocardium, and pancreas, and fibrosis of sciatic nerve and pancreas.

In the stomach the vessels affected were the small intramural arterioles, which showed acute necrotic changes with polymorph infiltration into the arterial wall. The larger vessels in the submucosa were unaffected. The ulcerated area showed a complete breach in the wall of the stomach without any significant cellular reaction except in relation to the arterioles at the margin.

In the sciatic nerve there was well-marked perineural and endoneural fibrosis with patchy demyelination. The vasa nervorum showed extensive vascular changes of all stages of polyarteritis nodosa, varying from acute necrosis to recanalisation. This is in keeping with the fluctuating neurological signs, with recovery due to restitution of the blood-supply and regression due to neural ischæmia.

In the spinal cord and cauda equina there was no evidence of meningovascular or parenchymatous neurosyphilis. The blood-vessels here showed no degenerative changes and there was no perivascular infiltration. There was no histological evidence that the neurological signs had their origin in the spinal cord or cauda; on the contrary, the evidence suggests that these were entirely due to the ischæmia resulting from lesions in the vasa nervorum of the peripheral nerves.

There was no evidence of the intimate histopathology of syphilis in the cardiovascular system, spinal cord, or viscera.

DIAGNOSIS

Diagnostic difficulties in this bizarre disease are notorious, and a correct ante-mortem diagnosis was made in only 12% of proven cases reviewed by Spiegel in 1936. The nervous system is involved in about 8% of all cases, and in retrospect the presence of a mononeuritis multiplex (Kernohan and Woltman 1938) probably due to ischæmia from polyarteritis of vasa nervorum (Wohlwill 1923) was suspicious. The coexistence of syphilis, and the presence of radicular rather than peripheral sensory impairment, confused the picture, and the ulnar involvement was slight. Similar pupillary changes have been previously recorded (Spiegel 1936).

It must be admitted that while none of the grounds on which the clinical diagnosis of polyarteritis nodosa was rejected is absolutely valid, in combination they militated strongly against clinical recognition. Not only has the association of syphilis with polyarteritis nodosa been recorded (Gruber 1925, and others) but syphilis was at one time held to have a causal relationship to the disease. In such recorded cases of polyarteritis nodosa associated with syphilis as we have been able to trace, details of antisyphilitic treatment and response are scanty, containing no reference to toxic reaction.

Changes in the vessels of the skeletal musculature were found in none of Kernohan and Woltman's 5 cases of polyarteritis affecting the nervous system, and this may be related to the absence of palpable nodules in the present case. Eosinophilia was present in only 12% of the cases reviewed by Middleton and McCarter (1935) and in only one of Spiegel's 17 patients. While the kidneys are involved in all cases, the urinary findings may be intermittent and limited to showers of red cells with successive renal infarcts. The presence of hypertension with a pyrexia of unknown origin is another highly suspicious feature retrospectively, but the rise of pressure (above the early elevated reading of Jan. 25, 1944) was less pronounced than usual, and this finding, no doubt related partly to the hæmatemesis, may be responsible for the absence of any evidence of aneurysm formation even at autopsy (Rich 1943) and of retinal changes.

ÆTIOLOGY

The ætiology of polyarteritis nodosa has been the subject of much discussion. Failure to implicate a specific micro-organism led to the postulation of a virus ætiology, in favour of which there is however no convincing positive evidence. Syphilis as the specific ætiological agent is excluded by the non-syphilitic nature of the most human cases, failure to demonstrate the spirochæte, and the occurrence of epidemics of a similar condition in lower animals (Arkin 1930, Spiegel 1936).

Its clinical relationship to allergic disorders has long been recognised, and Rackemann and Greene (1939) found a past history of asthma in 19 of 229 cases. Acute rheumatism and gonococcal infections have preceded polyarteritis nodosa in a number of recorded cases, and there is suggestive evidence also of its occasional relation to preceding streptococcal and meningococcal infection and scarlet fever (Spiegel 1936). Arkin (1930), although considering it probably a virus disease, comments on the similarity of the vascular changes to those of acute rheumatism. These and other observations support the earlier view of Gruber (1925), who first clearly formulated on clinical grounds the conception of polyarteritis nodosa as a hyperergic response to a variety of infective agents.

These observations have been clarified by the recent papers of Arnold Rich (1942, 1943) reporting the finding of typical lesions of polyarteritis nodosa in 4 patients dying after serum sickness, and adducing evidence that polyarteritis nodosa is a manifestation of anaphylatic hypersensitivity corresponding to a local antigen-antibody reaction, identical in type with the Arthus phenomenon. In a second paper he reports a similar case which followed manifestations of hypersensitivity to sulphonamides. More recently Rosenak and Maschmeyer (1945) have reported a further case of polyarteritis in which there was suggestive evidence of a relation to antecedent administration of sulphadiazine. These papers show that hypersensitivity to widely differing sensitising antigens can be responsible for the development of vascular lesions of polyarteritis nodosa type in different patients. Rich comments that in this connexion bacterial antigens must be considered as possible sensitising agents.

In a third paper (1943) Rich describes the experimental production of typical polyarteritis nodosa lesions in rabbits after the establishment of an anaphylactic condition comparable to serum sickness in man, by the repeated injection of horse serum. He shows also that a single large dose of foreign serum can be sufficient to produce these lesions, the antigen-antibody reaction occurring between antibody entering the circulation and the antigen still present in it. The lesions varied in severity in different animals and some showed in addition a diffuse glomerulonephritis.

The observations and experiments presented in these papers are convincing evidence that polyarteritis nodosa is in fact a manifestation of anaphylactic hypersensitivity; they also provide an explanation for features of

the disease which were hitherto obscure, and suggest "the advisability of attempting to discover and eliminate the responsible antigen in each case diagnosed clinically."

Like the sulphonamides (Schonholzer 1940, Davis 1942) arsphenamine, or mapharside, in conjugation with serum protein can act as a sensitising antigen. Death in anaphylactic shock following repeated injections of arsphenamine has been demonstrated experimentally in animals by Landsteiner and Jacobs (1936), and although the animals died acutely, and were apparently not autopsied, there appears to be no theoretical reason why arterial changes similar to those observed by Rich might not occur under less catastrophic conditions, nor why in some human cases of polyarteritis nodosa mapharside might not be the antigen responsible for the development of the condition. The clinical history of the present patient strongly suggests that this was in fact the case.

Except for syphilis, without definite symptoms, the patient was well until three days after his first injection of arsenical, and neither the clinical history nor the autopsy findings indicate any other likely source of sensitising or toxic product. He showed toxic reactions after practically every dose of these preparations, and the careful observations of July 13–15 show that the severity of the reaction bore a direct relation to the dose administered. The nature of the symptoms following injection—"blackouts," headache, diarrhœa, pyrexia, and recurrent polyarthralgia showing some response to salicylates—is entirely compatible with an origin in anaphylactic hypersensitivity. Hæmatemesis ninety minutes after his last injection of mapharside on Aug. 24 was the last dramatic link in the relation of his symptoms to the drug, and can reasonably be correlated with the relative acuteness of the vascular changes found in the alimentary tract.

Spontaneous healing of polyarteritis nodosa is not unknown, occurring in 10–20% of cases (Kernohan and Woltman 1938). Where the responsible antigen is the product of a sensitive micro-organism, therapeutic response to sulphonamide or penicillin appears possible provided the lesions are not yet irreversible. The complete failure of intensive penicillin treatment in the present case is another feature compatible with its relation to the arsenical antigen.

The question arises whether the picture could be accounted for as a direct toxic response to the drug (idiosyncrasy—i.e., innate hypersensitivity) without postulating anaphylaxis (acquired hypersensitivity). The possibility that some cases of polyarteritis nodosa are a direct toxic response is not overlooked by Rich in his second paper. In the present case the clinical features seem to point rather to an anaphylactic type of response. This is a difficulty which arises in considering other manifestations of arsenical intoxication. Judging from textbook warnings there appears to be a clinical impression that these reactions occur more commonly in patients who have had previous manifestations of allergy, and the clinical similarity of some attacks (e.g., the so-called "anaphylactoid crises") to anaphylaxis has long been noted, and the question of their attribution to such a mechanism has been begged largely on the grounds of their time-relation and their occurrence after first doses—an objection which as Rich has shown is not entirely valid. The more severe reactions to organic arsenicals, and in particular the hæmorrhagic encephalopathy described by Russell (1937), Courville and Marsh (1942), and others, are striking in their occurrence after several injections of the drug and in the presence of acute vascular necrosis with cellular infiltration of the vessel wall, in the neuraxis, as a cardinal pathological feature. These and other writers have discussed the evidence in favour of attributing the reactions, on clinical and experimental grounds, to acquired hypersensitivity, quoting the experiments of Landsteiner and Jacobs.

In our view three factors may be concerned in toxic reactions to organic arsenicals:

(1) A non-specific tendency of the subject to allergic reactions;
(2) possible innate hypersensitivity (idiosyncrasy), leading to early reactions, later accentuated by
(3) acquired hypersensitivity of anaphylactic type following subsequent injections.

Further, the nature and severity of the toxic reaction in a particular case, whether it takes the form of an anaphylactoid crisis, arsenical encephalopathy, or the subacute vascular lesions of polyarteritis nodosa, may depend on the intensity of these three factors and on the dosage of arsenical antigen administered.

In view of the apparent relation of the vascular lesions in the present case to hypersensitivity to organic arsenicals, experimental work on the lines indicated by Landsteiner and Jacobs, with an attempt to produce reactions of graduated severity and with examination of the animal tissues after death, is at present being carried out by us in the RAF Institute of Pathology and Tropical Medicine.

SUMMARY

A fatal case of polyarteritis nodosa is reported, undiagnosed during life, and associated with intolerance and toxic reactions to organic arsenicals administered in the treatment of syphilis. Diagnostic difficulties are briefly discussed. It is suggested that the condition represents in this case an anaphylactic type of hypersensitive response to arsenicals.

We wish to thank Air Commodore T. C. Morton, Consultant in Pathology, RAF, for permission to publish, and the numerous medical officers to whose excellent notes is due the completeness of the clinical record.

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INTESTINAL MUCOSA IN ULCERATIVE COLITIS

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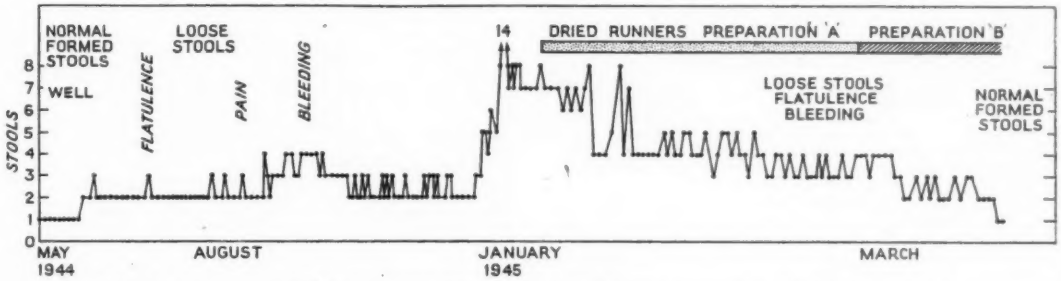
THE natural course of ulcerative colitis, with its tendency to spontaneous remissions and relapses, led me to consider that, in some cases at least, the condition might be a deficiency disease. Preliminary investigations suggested that the missing hypothetical factor might be present in or produced by some part of the intestine. I have previously described [1] the effects of administering raw pig's small intestine to a long-standing resistant case of ulcerative colitis. The striking feature of this case was the regularity with which remissions and relapses could be induced, according to whether treatment was maintained or discontinued.

About a year ago, when this man had remained well on treatment for a whole year, he once again voluntarily stopped treatment. Gradually his condition again deteriorated, with increasing flatulence, the stools became loose and frequent, there was daily pain and bleeding, at first but a few specks but developing into a steady flow (see figure). When his relapse had become unequivocal, the effect of giving a desiccated defatted preparation of pig's small intestinal mucosa by mouth was tried.

There were two preparations available, made by different firms. Preparation B (Allen and Hanburys) was a simple desiccated defatted substance. Preparation A (Benger) had been treated by various solvents before drying, in an attempt to retain enzyme activity. On preparation A the number of stools per 24 hours became less, but they were still loose, and flatulence and bleeding continued. On preparation B a complete remission occurred in about a month. Since then the patient has

1. Gill, A. M. *Lancet*, 1944, i, 536.



Course of first case. From May, 1944, to January, 1945, each dot represents two days; thereafter each dot represents one day.

continued well, taking preparation B daily by mouth. The course of his disease may be summarised as follows:

SUMMARY OF CASE 1

(*a*) 3 years continuous symptoms including 1 year on routine treatment, with no improvement.
(*b*) 3 months on ox stomach: no improvement.
(*c*) 6 weeks on pig's stomach and intestine: recovery.
3 months on pig's stomach and intestine: remained well.
Treatment stopped: gradual *relapse*.
(*d*) 4 weeks on pig's intestine: recovery.
3 months on pig's intestine: remained well.
Supplies failed: *relapse* for 1 year.
(*e*) 6 weeks on pig's intestine: recovery.
6 months on pig's intestine: remained well.
Treatment stopped: *relapse*.
(*f*) Pig's intestine resumed: recovery.
Pig's intestine for 1 year: remained well.
Treatment stopped: *relapse*.
(*g*) Dried preparation A: partial recovery.
(*h*) Dried preparation B: full recovery.

ADDITIONAL CASES

Apart from this man, other cases have been treated along similar lines, although only for a relatively short time and with varying results. The table (*a*) summarises the effects obtained in 5 cases given uncooked pig's small intestine ½ lb. daily by mouth. Three of the 5 became well; the other 2 showed no improvement. Owing to conditions prevailing when the 3 successful cases were treated, no follow-up was possible and their present state is unknown. They left hospital well.

The table (*b*) confirms in a group of cases the results obtained in case 1 with the two preparations of dried mucosa—i.e., there was partial or no response to preparation A, and good response to preparation B. Of the 3 patients receiving preparation A, 2 improved to the extent that the number of stools passed per 24 hours lessened, the other case remaining unchanged. All 3 were so discouraged, after having persisted with an unpalatable and somewhat nauseating and malodorous powder for many weeks, that they could not be induced to try preparation B and so act as their own controls, as did case 1.

ULCERATIVE COLITIS TREATED WITH (*a*) PIG'S SMALL INTESTINE; (*b*) DESICCATED DEFATTED INTESTINAL MUCOSA (PREPARATIONS A AND B); AND (*c*) INTRAMUSCULAR INTESTINAL EXTRACT

Case	Age (yr.)	Sex	Treatment	Duration of illness	Treatment	Result
2	21	M	(*a*)	3 weeks	1. Sulphaguanidine 2. Runners for 3 weeks	1. Nil. 2. Became well.
3	26	F	(*a*)	6 yr. Present relapse 3 weeks	1. Sulphaguanidine 2. Runners for 3 weeks	1. Nil. 2. Became well.
4	35	M	(*a*)	1 year	Runners for 4 weeks	Became well.
5	24	M	(*a*)	2 weeks	Sulphaguanidine; runners; blood-transfusions	Nil. Died of perforation of colon.
6	29	M	(*a*)	6 months	Sulphaguanidine; runners; blood-transfusions	Nil.
7	35	F	(*b*)	2 yr. Present relapse 4 months	1 oz. (≡cir. ½ lb. fresh material) of "Prep. A" daily for 8 weeks	Improved but not cured. (Stools fell from 12 to 4 daily.)
8	33	M	(*b*)	8 yr. Present relapse 4 months	1 oz. "Prep. A" daily for 8 weeks	Improved. (Stools fell from 8 to 4 daily.)
9	40	F	(*b*)	2 years	1 oz. "Prep. A" daily for 6 weeks	Nil.
10	50	F	(*b*)	1 year	1. Sulphaguanidine 2. 1 oz. "Prep. B" daily for 4 weeks	1. Sulphaguanidine twice induced a remission and then became ineffective. 2. Three further complete remissions have followed "Prep. B."
11	31	M	(*b*)	1 year	1 oz. "Prep. B" daily for 6 weeks	Became well.
12	50	M	(*b*)	3 months	1 oz. "Prep. B" daily	Died after 10 days with perforation of colon.
13	47	M	(*b*)	6 months	1. Sulphaguanidine 2. 1 oz. "Prep. B" daily for 4 weeks	1. Remission induced. Then became ineffective. 2. Became well.
14	23	F	(*c*)	1 year	5 c.cm. (≡ ½ lb. fresh material) every third day. Blood-transfusions.	Temporary improvement, probably due to the transfusions; relapsed while still having injections.
15	50	F	(*c*)	6 yr. Present relapse 4 months	2 c.cm. weekly, each injection producing general reaction and fever.	Temporary improvement, probably a "protein shock" result.
16	67	M	(*c*)	4 yr. Present relapse 8 months	4 c.cm. every third day, each injection producing general reaction	Nil; died after ileostomy.
17	40	F	(*c*)	2 years	1 c.cm. produced violent local reaction	Nil.
18	24	M	(*c*)	3 months	2 c.cm. every third day; sulphaguanidine	Became well, probably because of sulphaguanidine, which was given concurrently.

Of the 4 patients given preparation B, 3 became well and 1 died after only 10 days treatment—i.e., before it is usual for any noticeable improvement to occur. Case 10 is of special interest for two reasons. First, she has so far always relapsed on ceasing treatment and to date has regularly responded in about a month, having had 3 remissions thus induced. Secondly, for her last relapse she was given preparation A and there was no improvement—in fact, her condition deteriorated during the 4 weeks trial—whereas when preparation B was substituted she recovered.

An extract of intestinal mucosa suitable for intramuscular injection has also been given to 5 patients who for various reasons did not relish the oral preparation. As the table (*c*) shows, the results were not convincing.

SUMMARY AND CONCLUSIONS

A consideration of the natural course of ulcerative colitis led to the theory that in some cases the condition might arise as the result of a deficiency. Preliminary investigations suggested that the missing hypothetical factor might be present in or produced by the intestine. Feeding experiments in one case over several years showed that remissions could be induced regularly by giving uncooked pig's small intestine by mouth. Relapses always followed when this treatment was stopped. Remissions have also been induced in other cases given similar raw material; others, however, have shown no response.

Pig's small intestinal mucosa, dried and defatted, given by mouth in powder form, has also induced remissions in some cases. Those patients who respond relapse when the treatment is stopped. Of the dried mucosal preparations tried, one (preparation A) has little or no effect, whereas the other (preparation B) appears to be as effective as the raw material. Experiments with a parenteral extract have so far been unsuccessful.

The results obtained with this treatment do not appear to be coincidental or psychological: they are compatible with the deficiency theory advanced, but a local effect in the colon is not yet excluded.

It seems that the term "ulcerative colitis" must cover more than one disease, or that more than one ætiological factor is responsible for the syndrome, since it is impossible to forecast whether a given case will respond to this form of treatment.

I am grateful to Prof. Samson Wright for much valuable criticism and advice: to the patients, especially case 1, who have been willing to suffer a return of their distressing symptoms for the sake of proving a remedy: and to the firms supplying the material, raw (Messrs. P. R. Mosdal and Co.) and dried (Messrs. Benger and Messrs. Allen and Hanburys).

PSYCHIATRIC FACTORS IN PERIPHERAL VASONEUROPATHY AFTER CHILLING

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DURING the early months of the invasion of Europe we had the opportunity of observing cases of vasoneuropathic changes, due to chilling, in soldiers of the BLA. The term "vasoneuropathy after chilling," as suggested by Ungley and Blackwood (1942), is a better one for our purposes than the older term "trench feet," because it is comprehensive enough to include all the features seen.

Cases were in two groups, both drawn from combatant troops in action in severe weather. The first group (15 cases) were infantrymen, subjected to ice and snow. The second group (9 cases) were troops of an armoured formation under the same hard operational conditions but subjected to conditions of thaw and cold in steel vehicles. Both groups, while in battle, had a preliminary period of immobility, when enemy action restricted the infantrymen to slit trenches, in forward areas, under enemy observation and fire, and confined the armoured troops to their tanks. The infantry wore boots of the standard Army pattern with gaiters; the armoured troops wore rubber "Wellingtons."

CLINICAL COURSE

Group A.—In the first group the onset of symptoms was sudden. There may have been some preliminary warning, but in all cases the awkwardness of conditions made foot hygiene difficult. The first thing noticed was that the foot was cold; sometimes even this warning was missed and the feet were as if suddenly frozen—"I felt as if I was walking on the ends of my legs"—before the soldier appreciated that things had really gone wrong. Pain sometimes followed, depending on whether the men were able to move out of their exposed position or had to remain. Those who remained usually suffered pain, often of a shooting nature.

As soon as opportunity offered, the boots were removed. Swelling sometimes made this difficult. If œdema was not present before the boot was removed, it quickly followed, and was associated with pain. From then on, development was fast; the œdema increased, and the feet ached and turned a reddish purple. Sometimes swelling was minimal but the toes became blue and gangrenous (frost-bite) and blisters formed. In other cases there was no gangrene but the swelling was extreme (trench foot and shelter foot) and the pain was severe.

By the time the men were admitted to hospital the swelling had usually become well marked. The feet were cold; the skin was dry and anæsthetic. When the swelling was maximal, the foot was cold and insensitive to superficial stimuli or deep pressure. As the swelling subsided sensation began to return. This was usually first in the form of pain on deep pressure, then shooting pains and a burning sensation. When the swelling was not extreme, pain on deep pressure was often present from the beginning. In one case without much swelling but frank gangrene of the ends of the toes, there was little pain but pronounced anæsthesia, and the overlying skin felt stiff and fixed.

As the swelling disappeared, the exaggerated reaction to pressure passed off but the skin became hypersensitive; then as the skin wrinkled the foot became warmer, sensation returned to normal, and the affected areas began to perspire. At this stage the patient said that the foot was beginning to feel warm, and it was hoped that this meant that function was restored, but walking on the foot, even when sensation seemed normal, soon produced pain and "pins and needles."

Recovery was slow. Simple swelling, even without blistering or gangrene, often took four weeks or longer before normal sensation was achieved, and even walking produced pain. The return of sensation was often patchy, the areas of pressure and the toes being the last to recover. It was interesting to find, in the same foot, insensitive areas of dry skin and other areas where the skin was perspiring freely. Sometimes areas of perspiration showed residual hyperæsthesia.

All cases were treated by exposure to ward atmosphere without covering, and raising the affected areas. In the early stages pulling the men's feet under the bed coverings produced pain, and when this was done in their sleep it often woke them.

It was wondered why, among so many soldiers subjected to the same conditions, so few had been affected by cold to such an extent as to become casualties. This led to curiosity about the types of men affected. It was noted, for instance, that they nearly all had a history of sweaty hands and feet. It was also found that none of them were "old campaigners"—many were newcomers to their units, and had only been short periods in the line before they were affected. These features were strikingly common. In addition, the predominant type of personality seemed fairly consistent with that found in other "vasomotor" disorders, such as effort syndrome and autonomic imbalance. Each member of the group was accordingly submitted to psychiatric investigation.

Group B.—Some two weeks later, when this investigation had been done and the first group were on the way to recovery, the second group appeared. Six of these were troops of an armoured formation, who, because of the thaw and the resultant slush, had been issued with rubber "Wellingtons." The 6 men had all been in action under difficult conditions, which kept them confined to their vehicles. When they did get out, they descended into a sea of mud and slush, which was often frozen at night. Opportunities to dismount were

infrequent and short. A wireless operator or gunner compelled to keep constant watch has little chance of respite. In addition, the space in their vehicles was confined, and the floors were wet and cold. They were in action for six days during which there were few opportunities to take off their boots, and the confined space made it practically impossible to do so. Yet all 6 men carried on for five days without symptoms. Even then the onset was slow. They began by having periodic "attacks" of cold feet, which they relieved by wriggling their toes inside their boots, moving their legs, and stamping their feet on the floor. Gradually the intervals between these attacks of coldness got shorter, until on the fifth night their feet became continuously "dead," with numbness around the ankle, on the back of the foot, and up the calf, though they had bouts of pain in their toes and cramp in their calves. On the sixth day they came out of the line, and on removing their boots they found that their feet and legs were swollen, painful, and insensitive, and discoloured a deep bluish-red; the swelling affected the posterior part of the foot, the ankle, and the back of the calf. After receiving first-aid medical attention they were evacuated down the line to hospital. Here the swelling began to subside, but the discoloration remained and there was anæsthesia over the affected areas and pain on deep pressure. Although the areas felt hot, the skin was dry.

One of the other 3 men in group B had been wearing rubber goloshes for a short period. The remaining 2 had worn ordinary Army boots; one of these had been in the line six days without changing his footwear, and the other had to walk through snow to his vehicle, where he worked at a wireless set, and sit with his feet on a cold metal floor. Their clinical course was similar to that of the other 6 men in the group.

There seemed no obvious common type factor among the men of group B. The history of perspiring hands and feet, given so often by group A, was not notable. The only common factors seemed to be the external ones of immobility, cramped conditions, and wet and cold over the same period of six days. However, each member of group B was given a psychiatric examination similar to that in group A.

RESULTS OF PSYCHIATRIC EXAMINATION IN 15 CASES OF TRENCH FOOT (GROUP A)

Case	Age (yr.)	Length of service (yr.)	Home-separation anxiety	Prevailing emotional state	Manifest neurosis †	Unwilling to serve in Far East	Eager for discharge	Undue fear in forward areas	History of hyperidrosis
1	19	1	+*	UA	++	+	+	+	General
2	19	1	+	OA	+	+	..	+	General
3	20	2	+	CA	..	..	..	+	General
4	21	2¼	..	UA	++	+	..	+	General
5	24	5½	..	UA	+	..	+	..	Feet only
6	21	1½	+	OA	++	..	+	..	General, except feet
7	39	1	+	CA	+	..	..	.	General
8	19	1½	..	OA	+	+	..	.	General
9	32	4½	+*	CA	+	..	..	+	Feet only
10	19½	1	+	UA	++	+	+	+	General
11	22	3	+	OA	++	..	+	+	General
12	33	4½	+*	UA	+	..	+	+	Feet only
13	31	3½	+*	UA	..	..	+	+	General
14	20	1¾	+	OA	+	..	..	..	Feet only
15	19	¾	+*	UA	+	+	+	+	General
Totals			12	..	13	6	8	10	

UA, Unaggressive. OA, Overtly aggressive.
CA, Controlled aggression.
* With acute exacerbation of home-separation anxiety.
† Manifest neurosis: +, not materially disabling. ++, materially disabling.

PSYCHIATRIC FINDINGS

Owing to pressure of other work, the examination of each case had to be limited to an interview lasting about half an hour. It was therefore not possible to make detailed personality studies of each patient; only obvious motives for behaviour, outstanding neurotic manifestations, and patent deviations of character could be sought for.

Group A (15 cases).—The results of the examination are summarised in the table. Each patient was in medical category A1. Twelve had left school at the age of 14, two at 15, and one at 16. All belonged to the "working class"; none was of outstanding intelligence. Only 6 had more than 2 years' service, and the 2 men with over 4 years' service were comparatively recent transfers to the infantry. None had seen action (other than enemy air activity in the UK) before reaching the European theatre of operations.

Every man in this group gave a history of hyperidrosis in civil life, and in only one were the feet not specifically affected. The common complaint was of "sweaty feet" in the summer, which necessitated a change of socks from once every other day to twice daily. All presented what might be termed a predisposing "perspiratory personality"—warmth or effort would stimulate a more than average, and incommoding, flow of perspiration.

Twelve of the group were always preoccupied about their homes; and 5 of these were particularly disturbed just before the onset of their trench feet, about acute domestic problems, such as illness of children or parents, or business worries; 2 of the 5 being manifest psychoneurotics. Altogether there were 5 men suffering from psychoneurotic disability and 8 other cases presented evidence of minor emotional instability, shown in tics, phobias, and antisocial tendencies.

Twelve patients had been unable to develop mature control of their normal aggressive instincts. Seven of them had overcome these instincts by stifling them, and were consequently lacking in initiative, ambition, combatant temperament, or indeed any form of realisation of social purpose. The best that can be said of some of these, as soldiers, is that they were at least prepared to be led. The other 5 cases of inadequately controlled aggressiveness went to the other extreme, and gave that instinct full rein; two of them had been in approved schools for thefts, and were would-be gangster types; two were resentful, almost asocial men; and the last was a paratrooper whose bravado was fundamentally mere exhibitionism.

Ten patients admitted that they were conscious of almost uncontrollable fear while in action, at various times before the development of their trench feet, and 4 of these were overt psychoneurotics who were worthy of consideration for downgrading on psychiatric grounds alone. One of the neurotics had twice before developed florid psychiatric manifestations. Eight of the group were expressedly eager to be discharged from the Army, and 6 men objected vehemently to going to the Far East: one man because it might permanently affect his complexion—he did not want to return home "with his skin all burned up and leathery."

Hardly any of these soldiers seemed to comprehend the communal purpose behind his presence in the army. Personal morale, in a few cases, was high; public morale, in most cases, scarcely existed.

Group B (9 cases).—These men gave little indication of psychiatric symptoms. All except 3 had left school at the age of 14. None was below average intelligence: and each, if old enough before enlistment, had reached a reasonable status in employment. Six of the men had served for over four years, and none for less than 2½ years. One man was 20 years old and of proportionate maturity; two were 22, and the rest were 26 and over.

Five of these 9 soldiers had suffered from sweaty hands and feet in civil life, and could be said to belong to the "perspiratory personality" group, and 3 of the 5 showed definite, though mild, evidence of current psychoneurotic illness.

Eight of the men showed a good appreciation of their military rôle and its wider implications. In 6 morale was outstandingly high; and in 2 others it was sound, the men accepting their obligations reasonably and without active resentment or passive resignation. The 9 men had all been good soldiers, and 7 of them seemed likely to continue so. Of the 2 doubtful cases, one had recently been developing effort intolerance, was becoming

claustrophobic in his tank, and had almost broken when compelled to relieve his tank gunner for a brief period. He was the only one of the 9 who had a poor personality, and he had attained the lowest employment status of them all. The second doubtful case was a corporal in the Royal Corps of Signals who had been subject to a variety of infective skin conditions for several years. He had already been evacuated to the United Kingdom during this campaign on account of furunculosis, and during his stay there had several times "felt highly-strung and wanted to cry." He was the only man in this group who showed any evidence of home separation anxiety. A lance-sergeant in the Royal Armoured Corps showed a typical chronic mild anxiety state, but his personal and group morale was extremely high, and was more than compensating for his psychogenic fears; similarly a trooper of that Corps, in spite of clinical evidence of mild effort syndrome, had adapted himself to Army life and action.

In this group of 9 cases of comparatively mild peripheral vasoneuropathy, the incidence of disabling psychoneurotic or psychosomatic illness was thus very low, and this is the obverse of the fact that their morale was high.

DISCUSSION

The clinical findings indicated that the vasoneuropathy in group A was merely an intensification of that in group B, and suggested that the man prone to psychoneurosis (as well as the frank neurotic) of poor morale develops a more severe peripheral vasoneuropathy than the man of sound personality and good morale, under equal conditions of exposure to the elements and with the same lack of opportunity for adequate foot hygiene.

It is not merely that the man of good personality is more careful about the details of foot hygiene than his less stable fellow. The unstable, preneurotic man has a parallel unstable vasomotor system, and the hypersensitive neuromuscular control of his arterioles may make these vessels more susceptible to trauma from cold.

Furthermore, the temperature-regulating mechanism of the skin in this type of man is unstable and hypersensitive; as a rule his sweat glands are overactive, yet, though he is perspiring freely, his skin is cold, and he feels cold—the "cold perspiration" of anxiety. Such skin, already "cold and clammy," must be at a disadvantage when exposed to external chill and dampness (*Lancet*, 1945).

An American colleague has observed that success in the treatment of trench foot varies directly with the proximity of the patient to the forward area. A similar observation has many times been made regarding battle exhaustion. If there is a psychosomatic element in trench foot, this observation regarding its treatment is not surprising, and the parallel with battle exhaustion would also be expected.

The low incidence of trench foot in the British Army in this war, compared with the last, in spite of a period of static warfare, and in what should be strong, predisposing climatic conditions, may partly be due to the influence of personnel selection, which has tried to prevent intellectually and temperamentally unsuitable men reaching forward areas. The prophylaxis of trench foot then becomes as much a matter of personnel selection as of "foot hygiene"; and in its treatment the psychiatrist will sometimes be able to accelerate both recovery of function and return to some form of useful duty.

SUMMARY

It was observed that a history of sweaty hands and feet, and a tendency to neurosis, were common among soldiers suffering from peripheral vasoneuropathy after exposure to severe cold.

Twenty-four cases were therefore submitted to a brief psychiatric examination.

The findings suggest that the severity of the foot lesions is related to psychosomatic factors, the man of unstable personality being particularly liable to severe effects from cold.

In the study of the ætiology, prophylaxis, and treatment of peripheral vasoneuropathy, the emotional aspects should not be ignored. There is need for a more detailed investigation into the personality traits associated with this condition.

References.—Ungley, C. C., Blackwood, W. (1942) *Lancet*, ii, 447. THE LANCET (1945) Leading article, i, 214.

SELECTION OF PATIENTS FOR BLOOD TRANSFUSION

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IN this paper I shall discuss the indications for blood-transfusion as a life-saving measure in the immediate treatment of battle casualties. Experience shows that the wisest selection of recipients is not always made.

CASE 1.—At 12.00 hr. on Oct. 7, 1944, Pte. A. accidentally fell on the point of his bayonet which penetrated his right lower chest, between the fifth and sixth ribs, about 1½ in. from the border of the sternum. At 14.40 hr. he was admitted in a state of extreme collapse. Apart from a very small wound, ½ in. long, at the site indicated, nothing abnormal was found in chest or abdomen, and there was no external hæmorrhage. The radial pulse was imperceptible, and the blood-pressure (BP) was 60/??. One pint of plasma had been given in the field ambulance, and on admission a second pint, which had been set up as a travelling transfusion, was still running. As the patient's condition could not possibly be due to oligæmic shock the transfusion was stopped immediately. The injury, which was very slight and had not involved his pleural cavity, could not explain his poor general condition. Neurogenic collapse was diagnosed.

At 14.50 hr., 20 mg. of methedrine was injected intravenously. Before the needle could be withdrawn from the vein the patient vomited. The vomiting was projectile. Immediately afterwards he said he felt better, and his colour began to improve. The radial pulse was perceptible with a rate of 90 per min. two minutes after injection, and five minutes after injection the BP was 110/60 mm. Hg. The patient was evacuated in excellent condition at 16.30 hr.; BP 115/70, pulse-rate 76.

There are causes of severe post-traumatic collapse other than oligæmia, and transfusion is useful only in the presence of oligæmic collapse. The tendency to consider blood as a magic cure for all collapsed patients, irrespective of the cause of the collapse, is to be deprecated.

Since the indications for transfusion differ at divisional and corps levels these two phases of treatment will be dealt with in turn.

TRANSFUSION AT DIVISIONAL LEVEL

Resuscitation policy at divisional level is simple in theory though not always in practice. The policy is to save life and to make the patient fit enough, as quickly as possible, to stand the journey back to the surgical centre. If the BP is over 110 mm.; if the pulse-rate is satisfactory; if fractures are well splinted; if hæmostasis is carefully procured; and if all the ordinary measures are taken to keep the patient warm and comfortable—then there seems to be no reason why he should not travel back safely without transfusion, whatever the nature of his wounds. If the BP is low and the wounds severe (both these factors should be present) he will require plasma transfusion before he can continue his journey. If the BP is low and the wounds are of minor importance transfusion should not be required and some cause for the collapse, other than oligæmia, should be considered.

Chest injuries.—Except in extreme cases plasma transfusion should be avoided. In July, 1944, I saw two cases admitted to a CCS with plasma transfusions in progress; they had already had 3 pints, and pulmonary œdema had developed during the journey. Most chest cases do not lose blood excessively, and many factors other than blood-loss may be the cause of their collapse.

Abdominal injuries.—If the patient with a penetrating abdominal injury is reasonably fit, and if the BP is over 100, evacuation should not be delayed while plasma is transfused.

Severe limb injuries.—Men with a severe limb injury, if very collapsed with low BP, will of course require plasma; but over-transfusion must be avoided. One cannot do more for this type of case than give 3 pints of plasma in the field ambulance and 1 pint during the journey back. If this does not produce a favourable response and if there is no continuous unsuspected hæmorrhage,

the patient is probably suffering from severe toxæmia resulting from excessive tissue damage. The only treatment for this condition is urgent surgery; so it is very unwise to delay the evacuation of these patients in an attempt to obtain high-level resuscitation. The journey back to the surgeon must be risked.

CASE 2.—L/Cpl. B. was injured at 14.45 hr. on Sept. 4, 1944. He had a compound fracture of the right femur with multiple flesh wounds of both lower limbs. Tissue damage was extensive and severe. He was given 6 pints of plasma and 3 pints of blood in a field ambulance which was one hour's journey away from the CCS. On admission to the CCS at 00.15 hr. on Sept. 5 his condition was very poor—BP 80/50, pulse-rate 140. There was no external hæmorrhage. The fracture was well splinted. He was given 2 pints of blood quickly, but showed very little response. He was, therefore, sent to the theatre for quick surgery. His condition under the anæsthetic was always critical. Two more pints of blood was given in the theatre. He collapsed and died just after completion of the operation.

This patient had extensive severe tissue wounds and his surgical treatment was long delayed. Despite administration of 6 pints of plasma and 3 pints of blood previously, and although the femur was adequately splinted, he was admitted in a very collapsed state. It may be that his evacuation was unnecessarily delayed; for, as stated above, the chief factor in the treatment of any severe tissue wound is early surgery. To give such a massive transfusion as 9 pints of protein fluid in the absence of continued hæmorrhage, in a unit where no surgical facilities are available, may be a grave error of judgment; for, when surgery was available, the patient could not be resuscitated again. Resuscitation was dissociated from surgery, and in the long interval (about 9 hours) employed in attempting to improve his clinical state the patient became very toxæmic.

TRANSFUSION AT CORPS LEVEL

The object of resuscitation at this level is to get the patient fit for radical surgery, and to see him through both the operation and the danger period immediately after it. In deciding whether to transfuse, his condition must be carefully assessed, particular note being taken of the BP, the rate and volume of the pulse, and (above all) the severity and nature of the wounds. The degree of blood-loss is always an elusive quantity. When very large numbers of casualties are being dealt with in the field it is impossible to use special methods of investigation; but, with experience, a sufficiently accurate estimation can be made by clinical observation.

While the *general appearance* of a wounded man may cause one to decide quickly that he requires resuscitation, it is impossible, on appearance alone, to form an opinion whether or not transfusion is required in addition to the simple methods of treatment. The degree of pallor seems to bear no relation to hæmoglobin level or blood-loss.

Blood-pressure.—As a lone guide the BP reading is, in my experience, of relatively little value. Indeed during the peak periods of battles, when there is a continuous heavy rush of casualties, most transfusion officers have found it quite possible to perform adequate resuscitation without the aid of a sphygmomanometer. At such times a sound clinical judgment is a much greater asset than a cumbersome machine. The great principle, in these circumstances, must be to do the greatest good for the greatest number; and the taking of BP readings, except in isolated selected difficult cases, is prohibited by the high pressure of the work.

Post-traumatic hypertension is commoner in seriously wounded soldiers than is usually realised. It was noticed previously in air-raid casualties by Grant and Reeve (1941) who found an incidence of 9% in their analysis of 100 cases, though some of their patients were already hypertensive before they were injured. I have found this hypertensive state more common when dealing with battle casualties, presumably because it occurs essentially in the younger age-groups (20–40) and in strong healthy males. It can be safely assumed that the great majority of these soldiers are not normally hypertensive. The hypertension (BP above 140) is found most often with limb injuries but is also seen occasionally with abdominal injuries. The factors determining its presence are difficult to assess. It is seen in some of those cases in which injury is moderately severe and in which blood-loss is moderate but not excessive—e.g., a traumatic amputation through the leg. The interval between injury and examination is of paramount importance. It is found especially in patients examined within a few hours of injury and the incidence seems to vary directly with the speed of evacuation. In North West Europe patients have usually arrived at forward surgical centres within 6 hours of injury and very often the interval has been cut to 2–3 hours. Transfusion officers must not be lulled into false security by finding hypertension. Experience has shown that transfusion is always indicated, despite the high BP, if the injuries are in any way severe. When hypertension is present the BP does not as a rule rise or fall during preoperative transfusion; nevertheless, usually the general condition and pulse volume obviously improve.

It is not generally realised that the mercury sphygmomanometer is far from infallible. If the filter between the air-tube and the mercury bulb becomes partially blocked a fallaciously high reading will be recorded, and the greater the speed with which the armcuff is deflated the greater will be the error. It has been found that the air filters of sphygmomanometers used in field work are liable to be blocked by dust, and to ensure accuracy these instruments must be overhauled and tested frequently.

In modern battles a high proportion of casualties suffer from multiple wounds, and if BP readings are relied on too much in judging the need for transfusion difficulty will be experienced in treating those patients who have, besides other injuries, severe wounds of both arms. In these cases the upper limbs can be used neither for recording BPs nor as a route for transfusion. The lower limbs are much less suitable for both these purposes. When these circumstances arise one must rely on clinical judgment and pulse-volume to give an indication of the necessity for transfusion and amount of fluid to be used, and on the jugular veins as a route of administration, at least when speed is required.

Pulse.—Variations in pulse-rate, from case to case, in the presence of almost identical injuries, are so wide that the rate by itself is of little value in deciding whether to transfuse or not; but I am always much happier about the ultimate prognosis of a patient who has a pre-transfusion pulse-rate between 70 and 100 per min. than I am when it is above 120. Most severely wounded soldiers have a rapid pulse, and usually the rate is little influenced by transfusion during the preoperative period. But if the patient has wounds in any way severe his chances of survival are prejudiced if he goes to the surgeon with a pulse-rate over 130.

The volume of the pulse is of greater importance than the rate. A pulse of poor volume is a serious sign and indicates that transfusion is required. A poor-volume pulse is found, not infrequently, in the presence of traumatic hypertension.

Severity of wounds.—This is by far the most important deciding factor. If the wound is in any way severe—e.g., a traumatic amputation, a compound fracture of the femur with soft-tissue destruction, or a penetration of the abdomen, the patient should *always* be transfused even if the BP is high and the pulse slow. If this prophylactic transfusion is not carried out in these apparently fit patients there is a great danger of collapse either during operation or immediately afterwards. If the wounds are severe and the patient is collapsed with low BP the necessity for transfusion is clear; but it is not so obvious when the BP is normal or higher than normal.

If there is excessive tissue destruction and poor response to transfusion, operation should not be delayed, great though the risk may be. If transfusion is continued in the theatre and after operation many of these patients begin to improve almost at once. In these cases it is better to concentrate on postoperative rather than preoperative resuscitation.

Head wounds.—Casualties with head wounds travel well to the neurosurgical centre. They seldom require transfusion at CCS level. Transfusion is indicated if there has been large external hæmorrhage or if there are other severe wounds.

Chest wounds.—As a general rule, patients with severe penetrating chest wounds do better with than without

transfusion. The blood-loss in these cases is seldom large compared with that in a serious limb injury, but blood (1–3 pints) given carefully, under close supervision, is very beneficial. Plasma should be avoided. If care is taken there is no great risk from pulmonary œdema. The blood must be given moderately slowly: the first bottle should take at least one hour and the second at least two hours. Faster rates of administration may be dangerous; I have seen two patients with multiple wounds and an unsuspected penetrating chest wound who developed pulmonary œdema during a fast blood-transfusion. The patient with multiple severe wounds, including one or more which penetrate the chest, presents a great problem to the resuscitation officer. In each case the advantages of adequate fast blood-transfusion must be weighed against the concomitant danger of chest complications. The sight of a patient with fully developed pulmonary œdema, following transfusion, is one of the most distressing that one can witness.

Abdominal wounds.—It is sound policy to transfuse all patients with penetrating abdominal wounds before and during operation. Unless there is obvious gross intra-abdominal hæmorrhage—e.g., blood may be pouring out of the peritoneal cavity through a large buttock wound—plasma is the fluid of choice before operation. If much blood is found in the abdomen, blood can be given during the operation.

Limb wounds.—All severe limb wounds require transfusion before, after, and during operation.

SUMMARY

In the immediate treatment of battle casualties transfusion therapy tends to be abused. Oligæmia is the sine-qua-non.

At divisional level transfusion must be tempered with sound judgment. If the blood-pressure is moderately high and the pulse satisfactory, the patient should be evacuated quickly, no matter what injuries are present, and will probably travel safely. If there is any doubt about his condition a travelling transfusion is a wise precaution. Transfusion will seldom be required for chest and abdominal injuries, because in the former it is dangerous and in the latter it is usually unnecessary. Long-continued resuscitation of poorly responding limb cases should not be undertaken, and these patients should be evacuated as quickly as possible, with a travelling transfusion, to a surgical centre.

At corps level the most important factor in deciding whether or not to transfuse is the nature and severity of the wounds.

I am indebted to the Director of Medical Services, 21 Army Group, for permission to publish this paper, and to the Deputy Director of Pathology, 21 Army Group, for encouragement in the work.

Reference.—Grant, R. T., Reeve, E. B. (1941) *Brit. med. J.* ii, 293.

Reviews of Books

Recent Advances in Neurology and Neuropsychiatry

(5th ed.) W. RUSSELL BRAIN, DM OXFD, FRCP; E. B. STRAUSS, DM OXFD, FRCP. (Churchill. Pp. 363. 18*s*.)

THE change in the title of this valuable compendium is explained in a thoughtful preface which points out that "neuropsychiatry" is a convenient term to designate the territory, extensive and important, in which neurology and psychiatry overlap. The authors make it clear that in their opinion neurology and psychiatry employ concepts that are not at present interchangeable, and that each covers ground too large and too intensively cultivated for any single person to be an expert in both; but they insist on the manifest interdependence of the two in many practical and theoretical respects. This is illustrated in their detailed treatment of electro-encephalography, epilepsy, electrical convulsant treatment, prefrontal leucotomy, the frontal syndrome, the presenile dementias, brain injuries, and neural effects of vitamins. For this edition the book has been almost entirely rewritten, in order to deal adequately with the many advances made during the last five years. The range of topics is remarkably wide and continues to justify the authors' hope, expressed in their first edition, that the book should be an auxiliary textbook of applied neurology. The chapter on the treatment of head injury from the surgical standpoint (which has been written by Douglas Northfield), and the comprehensive description of electrical convulsant therapy illustrate this aspect of the work, while the chapter on the hypothalamus is an example of the authors' intention to make fundamental principles emerge from a wealth of detail. Although here and there some of the English contributions receive slightly disproportionate attention, the book gives a balanced and well-organised picture of the progress of neurology during the last decade.

Familial Susceptibility to Tuberculosis

Harvard University Monograph in Medicine and Public Health. No. 5. RUTH RICE PUFFER, DR PH, Tennessee department of public health. (Harvard University Press. Pp. 100. $2.)

THIS monograph is largely a statistical survey undertaken for the purpose of giving evidence about the part played in the production of tuberculous disease by familial susceptibility to tuberculosis and by exposure to open cases of tuberculosis. As the title suggests, emphasis is laid throughout on the former. Being a statistical report, the treatment of the subject is limited and this also applies to its readability. However, the subject-matter is of particular interest at the moment, and the author adds some new data, particularly about tuberculosis in consorts. From observation carried out in the Williamson County Tuberculosis Study, she indicates the importance of family history in the incidence of tuberculous disease and also in the type of disease contracted by the husbands and wives of tuberculous persons. The incidence of tuberculosis in siblings, parents, and children of the tuberculous is discussed and the recent work of Kallman and Reisner on tuberculous incidence in twins is fully reported. The final section deals with the application of the findings to the control of tuberculosis. Many of the recommendations are recognised as sound already but the logical conclusion to be drawn from the findings is that all those with a family history of tuberculosis should be watched throughout life—a far more extensive undertaking than is usually contemplated, especially in this country, where even our arrangements for watching direct contacts are still inadequate.

Child Welfare

HILDA M. DAVIS, MD LPOOL, DPH, assistant medical officer for Bucks. (St. John Ambulance Association. Pp. 336. 2*s*. 6*d*.)

WRITTEN primarily for the St. John Ambulance Association, this book deserves wide distribution. It deals with the history and present functions of infant-welfare clinics and nurseries, and describes in detail the management of the child up to five years of age. Good advice is given on nutrition and feeding; normal and abnormal problems of health and behaviour are described, and there are short accounts of the commoner diseases and infections. The book, with its useful illustrations and feeding-tables, contains much reliable knowledge written in simple language.

Bacteria in Relation to the Milk Supply

(3rd ed.) C. H. CHALMERS, B SC EDIN., NDA. (Arnold. Pp. 272. 8*s*. 6*d*.)

THE modest title covers a comprehensive book described as "a practical guide for the commercial bacteriologist." In its third edition it is, in fact, an up-to-date, clearly written textbook for the student of public health, the MOH, and the sanitary inspector. Mr. Chalmers covers the whole of his subject; he is accurate in detail and economical with words, yet his book is in no sense a catalogue. In each section he explains the principle before giving the technical details of a test. Then he criticises the test, showing its uses, its value, and its limitations. His account of the object of pasteurisation is beautifully concise. He does not claim much originality in this work, and indeed records his debt to many workers and writers; nevertheless the book bears the stamp of personality, and it is good.

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THE LANCET

LONDON: SATURDAY, AUGUST 18, 1945

An End and a Beginning

THIS week has seen the final crescendo of the Second World War and the end of war as it has been known. With all its horror and tragedy war brings the glory of brave deeds and the magnificence of sacrifice. In war men die and cities are laid waste, but in war also men live finely and cities forget their strife in a common unity. War has a grandeur that satisfies some deep-rooted human instinct. This is a fundamental fact, one that no statesman, philosopher, or religious leader will dare to face squarely, yet one of which every dictator is aware and on which he is prepared to play.

The atomic bomb has brought a new conception. When courage and self-sacrifice count for nothing, when treachery and the possession of a supply of uranium will enable the coward and the weakling to overcome the brave and the strong, when half a dozen Lancasters can carry enough bombs to wipe out the whole population of the British Isles in the space of a few seconds and leave the land desert and uninhabitable, possibilities that we have not as yet been able or dared to comprehend have come upon us. Fortunately this new weapon has coincided with rather than brought about the end of the war, and the responsibility of using it to carry out the wholesale extermination of which it is clearly capable has not been laid upon us. When the first bomb was dropped on Hiroshima, Japan's resistance was near its end. Her fleet was destroyed, her merchant navy decimated and unprotected, her armies split into scattered units without supplies, her air force impotent, her factories wrecked. The atomic bomb did not so much force surrender as give excuse for a capitulation that was already inevitable.

And now we are to have peace: not a peace of joy and boasting, but a peace of solemn self-communing among peoples sick of the slaughter, aghast at the general brutalisation and dulling of standards that six years of bitter conflict have brought in their train, weighed down with the responsibilities of the morrow.

Yet we in Britain have much to be thankful for. Never in our history have we been so united in purpose; never have our fortunes been in abler or more determined hands; never have our forces been so well led or so well supplied; never have our wounded been so skilfully and successfully cared for. We have escaped time and again the annihilation that would have been our fate had our enemy been a bit cleverer, a bit quicker, a bit more lucky. In spite of increased work and short supplies, we have reached a new high level of national health and nutrition. Our scientists have led in every sphere, in the design of aeroplanes and engines, in the development of radar, in jet propulsion, in the exploitation of the sulphonamides and the discovery of penicillin, in the research that led to the release of atomic energy.

These discoveries and the brains that made them can bring further benefits to mankind in the years to come, if with them we can keep the spirit of service that prevailed under the stress of danger. The developments of war medicine can, for the most part, be applied to the needs of peace without adaptation. We have a transfusion service and a range of bacteriostatics that between them have gone far to abolish shock and sepsis, the two factors that have hitherto set the limit to surgical progress. We have a generation of young Service doctors trained to a high standard of technical skill. We have the machinery of a service that has shown itself able to handle any medical emergency in any part of the world. Thus armed, we should be able to show that peace hath her victories no less renowned than war.

Clinical Specialism

OUR hospitals are about to be "rationalised." The specialists and consultants who form their staffs are to be organised into a specialist service. "Having regard"—as the civil servants would say—to the functions of the specialists in the body of medicine, what is the most suitable pattern of organisation? No-one yet knows. There is no precedent. Army organisation, though instructive, is of a different order; for the task of maintaining the fighting fitness of a picked body of soldiers appears almost simple compared with that of making and mending the health of a nation; and the restrictions and wastages accepted by all ranks for the duration of a war would be intolerable in peace. A new kind of organisation must be evolved by experiment, and we can do no more at this stage than feel after its guiding principles.

The origins of specialism should first be examined. With the growth of knowledge and the development of technique the mastery of all medicine by one man became impossible, and division of labour naturally followed. Natural divisions have developed with varying types of boundary, sometimes overlapping. Physiological systems of the body distinguish the specialties of the neurologist, the dermatologist, the obstetrician-gynæcologist, and many others. Surgery is built on a special technique of treatment; genito-urinary surgery is based largely on the cystoscopic technique of investigation, and other subdivisions of surgery are made mostly on a regional but in some degree on a technical basis. Anæsthetics is the study and practice of a special group of techniques. Ophthalmology is all the medicine and all the surgery of a single organ, the eye. Diagnostic radiology is a large specialty comprising a single technique of examination, applied all over the body. Allergists specialise in certain diseases which appear to have ætiologically something in common.

Increasing knowledge and developing technique are natural bases for specialties, but there are also artificial influences which have contributed to their establishment or growth. Infectious diseases have become a special branch of medicine not because of more knowledge of diseases caused by infection but because it was held necessary to treat certain infectious diseases in isolation hospitals. Tuberculosis, comprising pulmonary tuberculosis and an uncertain fraction of non-pulmonary tuberculosis, is today the concern of a specially organised medical service; this happened, not because the subject of tuberculosis, on its practical side, became so vast that it could be

mastered only by specialists, but because vast numbers of tuberculous patients needed treatment which was too expensive to be provided by existing hospitals and practitioners: a specialised service had to be created, at public expense, to meet that need, and pulmonary tuberculosis is a single-disease specialty, unduly isolated from general medicine, for reasons which are largely administrative and social, not inherent in the nature of the subject. Much the same may be said of venereal disease. Other unduly small tracts of medicine sometimes become fenced off as specialties because they contain large numbers of patients able to provide a livelihood for specialists: the specialist in diabetes is an extreme example. School medicine is a specialty largely restricted to clinical examination of a limited scope, divorced from treatment; it was organised to fill a gap.

In general, the differentiation of a special field is influenced not only by the extent of its intellectual content and the complexity of its technique, but also by the number of patients occurring in it. The former influences are natural and in the main lead to sound demarcation of special fields; the latter are suspect, as apt to narrow the range of the specialist's outlook and fill his time with repetitive work.

The factors that have created specialism still act to promote an increasing subdivision of medicine. Occasional voices are raised in protest against over-specialisation or too narrow specialisation. Dealing always with diseases of one system or of one type, they say, the specialist is in danger of developing a diagnostic bias, and of becoming more interested in the disease than in the patient, to the detriment of treatment. In the more restricted specialties he suffers from too little variety of experience and insufficient mental pabulum, making him narrow-minded. There is no doubt a limit beyond which increasing experience in a restricted field warps judgment instead of refining it. Much depends on the specialist's type of mind and on his education.

Here it is necessary to distinguish between two functions of specialism in the pattern of medical organisation. One is routine diagnosis and treatment, which is the application of existing knowledge with judgment and skill. The other is the advancement of knowledge and the improvement of technique. The two are not exclusive but the overlap is not great. A few of the workers in a given field are pioneers, who break new ground; the majority are settlers, who occupy it. The distinction is not an invidious one, and it should not be blurred, for the conditions in which the pioneer does his best work are often different from those that suit the settler. An intensive study of a narrow field is one pioneering method. Clinics for the observation and treatment of cases suffering from the same disease, and institutes, hospitals, or special departments for handling restricted groups of patients, are appropriate for this purpose. There should be as many of these as there are pioneers of good quality to staff them. They will be found mostly in large centres of population. They should be allowed to specialise as narrowly as they wish, so long as they fulfil their prime function, which is not just treating patients but adding to knowledge. With this outlook let us encourage specialised cardiologists, specialised endocrinologists, or specialised hypophysologists, if need be. But for the settlers, too fine a ramification of subdivided specialism carries no advantages and is fraught with the dangers of narrowness and monotony. Their best work is done in a fairly wide and varied field, though one corner of it may often attract their special interest: they may be general physicians with a special leaning to cardiology, or general surgeons with a special experience of one region or one type of operation; but their outlook should remain general.

It must be added that intensively specialised study is not the only pioneering method. From among the settlers there emerge a few whose outstanding minds, at grips with a wide experience, produce new ideas and new points of view that raise them to the ranks of leaders. The broad distinction, however, remains.

There are, then, both varieties of specialism and degrees of specialism. They have grown and changed, and, as knowledge grows and need changes, they should continue to grow and change. How will they be influenced by the organisation of a national consultant and specialist service? If the organisation is thorough, detailed, and tidy, with a precise classification and carefully adjusted grades, it is likely to freeze the present pattern and hinder development. Yet organisation is necessary: it is a modern society's only tool for creating what it lacks—in this case, a comprehensive medical service. It is a dangerous tool. The planners of specialism are in danger of arguing that because the pioneers have done brilliantly in their restricted field—say neurology or cardiology—therefore a pioneer corps of neurologists or cardiologists should be organised to care for all the neurological and cardiac patients in the country; no less extravagant a claim has actually been made by psychiatrists, and there have been pleas for the national organisation of chest surgery centres, clinics for renal disease, and other such specialisms.

Any claim to the monopoly of work within a special field should be examined critically. It cannot be justified by the interests of the pioneers, for there are not enough of them. For routine work it can be justified only when the technique involved is so difficult that constant full-time practice is necessary to maintain it. On that ground it may reasonably be urged that major surgery should be undertaken only by fully trained practising surgeons, and that surgical specialists should be available to carry out all the major operative work in the country. Among the subdivisions of surgery, neurosurgery has probably a good case for a monopoly of its highly technical field. Whether the same may be claimed for orthopædic surgery is still a matter for discussion. The orthopædic surgeons are already well on the road to securing a monopoly, but it is questionable whether the inherent complexity of orthopædic principles and technique justify it. Chest surgery faces the same problem. In medicine, none of the subdivisions can reasonably claim a monopoly of its field.

It is shortsighted to argue that, because the orthopædic surgeon can treat a hundred fractures better, on the average, than the general surgeon, therefore every fracture should be treated by an orthopædic surgeon; or that the neurologist, because he has a more intimate knowledge of neurology, should be made responsible for every neurological patient. The relation between these more intensive specialists and the general surgeon or general physician should rather

be this: it is the duty of the pioneer to teach the general surgeon or physician as much of his art as the latter can reasonably be expected to acquire and practise; it is the duty of the general surgeon or physician to learn that and use it so far as he can, to know his own limitations, and to seek the expert's help, without fears for his own prestige, when faced with a problem that goes beyond his competence. Collaboration must replace rivalry, and friendly criticism exercise its educative function in both directions. The specialised surgeon or physician should always be a jump ahead of his general colleague, even of the general colleague who has a special interest in his field, and the general colleague should be always making to overtake him.

This sort of relationship between general medicine and surgery and their subdivisions will not develop if the latter are organised into watertight compartments. On this, the pattern of any national service of specialists that may be instituted, and the official recognition accorded to higher qualifications, will have an all-important influence. We would urge that the categories in such a service be as few as possible. Medicine and surgery, as now generally recognised, should not be further subdivided. For the specialties within each the normal general training and appropriate qualification should be demanded; beyond that, those specialising, fully or partly, in narrower fields should be left to achieve their status by their performance and secure appointments on the strength of their record. If diplomas in these narrower fields (e.g., neurology, cardiology, orthopædic surgery, physical medicine) are instituted, they should not have official recognition. This would not apply, of course, to the already well-defined specialties which lie outside general medicine and surgery, or often bestride both; obstetrics and gynæcology, ophthalmology, otorhinolaryngology, radiology, and anæsthetics should have their own basic training and their own officially recognised higher qualifications. But this list should not be readily extended; whether, for example, pædiatrics and psychiatry should be statutorily recognised as independent categories, requiring their own basic training from the beginning, or whether pædiatricians and psychiatrists should appear under the heading of physicians, and first qualify as physicians, is a matter for consideration.

The biologists have taught us that man achieved his superiority over the animals not merely by developing a superior brain but also by preserving a generalised adaptable bodily structure: "We are led by the evidence of comparative anatomy to ponder upon the freedom of the will, or at least freedom of action, which we have because our bodies are versatile, untrammelled by specialisation for extreme but particular skill, and capable of any task the mind may imagine."[1] The body politic of medicine is analogous; overspecialisation in the long run will hinder growth and adaptation, and is at this stage in development most carefully to be guarded against.

Another temptation to the planners is to place too much faith in central direction. The nervous system integrates the activities of the human organism because it is played upon by influences from the periphery, and much of the nervous system is itself peripheral. The integration of the activities of specialists and consultants must grow out of peripheral collaboration in every hospital, town, and region; it cannot be achieved from Whitehall or Edinburgh.

Wherever possible, specialists should all work in one general hospital, rather than in isolated units. But the traditional organisation of departments within a hospital is not necessarily the best. There is room for experiment with new arrangements. Instead of the medical firm of roughly 50 beds under one chief and an assistant chief, it might be better to place say 150 beds under a group of six physicians. This need not mean an authoritarian head and five assistants chafing in subservience; the group might learn to govern itself more after the fashion of the directorate of a company or the fellowship of an Oxford or Cambridge college. The joint control of wards by physician and surgeon has been mooted and tried; it should do much to improve the practice of both and to benefit the patients. Attaching a medical registrar to an eye ward or an ear, nose, and throat ward is another device for making ideas flow between one specialist compartment and another.

However high the standards of intellectual honesty may be among hospital chiefs, they still work under the disadvantage that their performance is not subjected to the regular criticism of their equals and peers; the tacit comment of students and juniors in a teaching hospital is an imperfect substitute. The more colleagues can look over one another's shoulders the better their work will be. Two obstacles stand in the way of this—competition for private practice and competition for prestige. A national health service may reduce the former, but only the deliberate cultivation of a tradition of personal friendliness and unselfish coöperation will overcome the latter.

1. Corner, G. C., Ourselves Unborn, London, 1944, p. 174.

Annotations

THE CLAIMS OF UNRRA

THE task of feeding Europe in the first winter after the war always promised to be heavy, and the leaders of UNRRA have laid their plans with that in mind. It is dismaying to learn that their estimates of the supplies needed have not been met. At the Council meeting, held in London on Aug. 8, Mr. Herbert Lehman, the director-general, reported that over and over again requests of exceedingly modest proportions made to the supply authorities have not been complied with, and seemingly firm commitments have disappeared when the moment for delivery came. He reviewed what has been achieved already. UNRRA was not in a position to press forward with its work until March or April of this year. The first job was to send supplies to liberated areas unable to pay in foreign exchange, and by June 30 supplies to the value of $295,000,000 (£59,000,000), and weighing 1,250,000 tons, had been shipped. By the end of August it is hoped that the total will have reached 1,800,000 tons. Much food was sent: but there were also tractors, livestock, farm machinery, fertilisers and seeds, raw cotton, and wool. The contribution is small when set against the ravages of war, but it is a beginning. Medical supplies have included DDT powder to combat malaria and typhus, as well as sera, vaccines, X-ray equipment, complete hospital units, sulphonamides, and penicillin. The greatest difficulty has been to get transport. So far, about 20,000 lorries are promised or are being shipped; but, as Mr. Lehman said, these are not enough, and they have not come soon enough. He forecast that UNRRA would have to

ship, during the last 7 months of 1945, supplies worth $1,051,700,000 (£225,340,000); and this would leave only $175,000,000 of the fund in hand for the needs of next year. He insisted that the resources provided at the Atlantic City meeting were wholly inadequate to give even minimal relief to the countries needing it. The requirements for 1946 were estimated before the Soviet had asked UNRRA for help to the value of $700,000,000 in the coming year; and even without this claim, at least $1,500,000,000 more will be needed. The money and goods must be found; nearly the whole of liberated Europe is facing prospects of famine and the bitter effects of cold. The peoples of the liberated countries will not be safe until they have harvested next year's crops. They need food, tractors, raw materials, clothing, and coal; to supply them UNRRA needs shipping and supplies, especially fats, dairy products, meat, and lorries. To meet these bare needs those of us who are better off must give up a little more, and postpone our own hopes of an easier time to come. Mr. Lehman believes, and he will be widely supported, that it is a sacrifice which will be made willingly for those who suffered under the Nazis and resisted them so capably in the underground armies. He insists that the supplying governments must be prepared to fulfil their promises rapidly and generously; otherwise they would do well to give no pledges, for if the promised help is not forthcoming the name of the United Nations will be defamed in Europe this winter.

GROUP PSYCHOTHERAPY

THE social aspect of neurotic conditions, which was emphasised and studied by Burrows almost thirty years ago, has received increasing recognition in the development and application of methods of group psychotherapy. But more practical needs have stimulated interest in group treatment; economy of therapeutic time is an urgent matter today, when the war has revealed the shortage of trained psychiatrists. It is natural that psychiatrists should bring, from individual psychotherapy to group practice, different methods of approach, and that there should be several developments in group therapy.

The inter-reactive tensions arising between people in groups are a legitimate subject for study by those interested in analytic methods and who view neurosis as a disturbance of social relationships. The group setting, however, has important features of its own which have shown it to be more than a method of saving time; significant symptoms are thrown into social relief, and functional diagnosis becomes easier and sounder than in short interviews, while progress can be observed and prognosis made more sure. Foulkes believes also that a specific therapeutic effect springs from the inter-reactive group situation, and shares the experience of American therapists that ego-strengthening and social adaptation are particular gains, even in short group treatment, where insight may not be reached. A deeper method, with the therapist analysing the personal and group defences that prevent free discussion and emotional interchange, has been used in parallel with individual analytic treatment, but the need for short treatment has impelled the development of less interpretive practices. In these, the therapist occupies a seat among a group of 8–10 patients, arranged roughly in a circle, and takes part in a group discussion, steering it without controlling it, and allowing the group to produce and resolve its own tensions, without necessarily demanding insight. Socialisation of the neurotic, rather than personal integration at a deep level, is the aim, but deeper changes in the personality do occur. It is an important point that the therapist is in no way the central pinion of the group, but rather is ready to capitalise and help emotional interchange by comment and remark from time to time. These groups are free to raise topics of their own choice, and it is usual to find that they raise and struggle usefully with the very bones of their own psychological skeletons.

Group therapy is more widely practised, however, with larger groups, and on a more superficial level, with the psychiatrist in a didactic, persuasive, or hortative rôle. The patients meet in a group up to fifty strong, and the psychiatrist opens a lecture-discussion on adjustment problems, or explains psychosomatic phenomena, and teaches sufficient anatomy and physiology from charts for the patient to grasp simple facts of the mind-body relationships. This is an extension of the methods of individual explanation and persuasion, and retains the aim of furthering a patient's understanding of his own illness without freeing his deeper psychological forces. It is a system of education and informative discussion on the intellectual level, with the psychiatrist as a self-appointed leader, and is concerned with collections of individuals rather than with the dynamics of group interpersonal relations.

At a recent conference of psychiatrists from the three Canadian Services and the Department of Veterans Affairs, in Montreal, three papers on group psychotherapy paid recognition to the difficulties that neurotics find in living harmoniously in groups, and to the reduction in tension and the improvement in interpersonal reactions which follow group treatment. All speakers regarded a full activity programme, including physical and recreational activities, as well as art, music, and crafts, as an important extension to formal group psychotherapy, stimulating interchange of ideas and reducing the sense of isolation. Group activity is the natural corollary of group treatment and helps the neurotic to overcome his difficulties and sense of guilt, and one particular variety of it—psychodramatics—is in increasing use. Moreno's view, that an individual on a stage plays his own emotional rôle if placed in a dramatic situation of emotional importance to himself, has been confirmed widely in practice, and the resultant emotional catharsis and liberation are regarded as valuable on both sides of the Atlantic. When used in groups the increase in tolerance and reduction of guilt that follow psychodramatics foster the group identification that the neurotic finds so difficult.

PENICILLIN FOR GONORRHŒA

THE practice of therapeutics has many disappointments, and the cynical physician who remarked, "let us use this new drug before it ceases to cure," was smarting from the memory of past failures, and enthusiasms doomed to oblivion. Yet some remedies have proved so efficacious that even enthusiasts could not discredit them; and penicillin is one of these. Its promise for the control of gonorrhœa is of vital importance to the community in view of the wide prevalence of this disease which has hitherto offered sturdy resistance to all the means aimed at its extinction. Reports continue to claim a remarkably high rate of cure and hopes run high, so that some epidemiologists are already prepared to turn a page and write off a major public health problem. Even the most careful clinician cannot but be impressed by the accumulating evidence of highly satisfactory results.

Most of the initial work in this field has been done in the Services, which combine prior claims on stocks of penicillin with plenty of suitable cases under ideal conditions for control and observation. The *Army Medical Department Bulletin* for June, 1945, estimates that the routine use of this drug for the treatment of gonorrhœa in one theatre of war in a single month saved 20,000 "man-days" and 800 hospital beds. The problem has been not to establish the therapeutic value of the drug but to find a standard dosage which will produce most cures in the shortest time with the minimum amount of penicillin. Single large doses or large doses given at intervals of a day or two do not seem to have been so

consistently effective as smaller doses given intramuscularly at intervals of 1–3 hours and spread over periods ranging from 8 to 24 hours. In most such schemes of dosage the total amount of drug used is about 100,000 Oxford units—a dosage which has come to be accepted almost as the standard for uncomplicated gonorrhœa. It is noteworthy that the Army is now to adopt a scheme of treatment in which 150,000 units is given as five intramuscular injections each of 30,000 units at 2-hourly intervals. Thus treatment is complete in 8 hours. This system of treatment has been adopted after the experience described by Lloyd Jones, Maitland, and Allen [1] who with this method had only one failure in 265 cases. The *Bulletin* does not indicate whether this increase in standard dosage is due to disappointments with schemes using 100,000 units. This may be so, because the earlier use of penicillin for gonorrhœa was restricted to "sulphonamide-resistant" cases, whereas now it is standard treatment for the case of gonorrhœa when first diagnosed. All other remedies for gonorrhœa gave better results when used later in the course of the disease when some assistance might be expected from normal immunity processes; and it is unlikely that penicillin will prove an exception to this rule.

Hitherto military cases of gonorrhœa have been treated with sulphonamides in units or camp reception stations and have been sent to hospital only in the event of failure. Now whenever possible such patients will be admitted to the special departments of military hospitals or to specially chosen camp reception stations, a procedure which is a recognition of the fact that success in the use of penicillin depends on the faithful observance of points of detail in its preparation and use, and that the resources in staff and equipment of minor medical units are not always sufficient to ensure the necessary standard of technique and regularity of administration.

The clinician will hold to some mental reservations when enthusiasts claim that penicillin has solved the gonorrhœa problem. He is well aware of the peculiar talent for latency which the gonococcus displays, and has already seen undoubted relapses occurring some time after apparent cure. He is also mindful of the fact that this organism seemed progressively to increase its power to resist the sulphonamides. May it not learn to resist penicillin also? Time will show.

PERSONAL FACTORS IN TRENCH FOOT

IT has long been suspected that individual susceptibility to cold is important in determining the incidence of trench foot and allied conditions. In any group of patients exposed to identical environmental conditions whose feet have suffered damage from cold, there is always considerable variation in the severity of tissue damage. Certain local and general factors, footwear, immobility and constriction of the limbs, wounds, blood loss, and malnutrition may influence the severity of the lesion caused by the exposure to cold, but when these are excluded there remains a strong impression that people of a fairly definite psychosomatic type are most seriously affected. From his experience of trench foot in the last war, Thomson [2] concludes that those of "angioneurotic disposition" are more vulnerable than others. In this issue Osborne and Cowen present the results of a psychiatric assessment of two groups of patients who suffered from "peripheral vasoneuropathy after chilling." The number of cases is small, and it is unfortunate that the writers could not examine a control group of unaffected men from the same regiments as the patients. In their first group none of the patients had previous battle experience, morale was low, the incidence of neurotic traits high, and all gave a history of previous hyperhidrosis, usually affecting the hands and feet. The second group was composed largely of battle-trained men from an armoured division whose morale was high. The incidence of psychoneurotic or psychosomatic illness in this group was low but the majority belonged to the "perspiratory personality" group. The degree of exposure in the two groups of cases is not strictly comparable, but even if allowance is made for this, the severity of tissue damage was greater in the first group of cases. From America, Lesser [3] reports a high incidence of vasomotor imbalance in a group of immersion foot casualties from the battle of Attu. He suggests that this may be related to a constitutional sympathetic nervous instability in the individual patients. The significance of these findings is obvious; the thin, nervous, highly-strung youth with cold, clammy hands and feet is more likely to become a casualty from the effects of cold and wet than his more robust prototype and should be eliminated from any fighting force which may have to operate under these climatic conditions.

A physiological explanation for this clinical observation is readily available. Hyperhidrosis provides additional moisture and increases the rapidity of heat loss. An acrocyanosis and sluggish peripheral circulation is the result of arteriolar constriction. The effect of cold is to reduce peripheral blood-flow still further by a direct constrictor action on the main blood-vessels, and by reflex sympathetic vasoconstriction which is exerted most strongly on the arterioles. Therefore on exposure to cold the man with cold, cyanosed, and moist extremities will tend to have his peripheral blood-flow reduced to the critical level for tissue damage more rapidly than his neighbour who has a normal peripheral circulation. When the exposure to cold is gradual and protracted, the importance of a pre-existing vasomotor instability in determining the severity of tissue damage is clear. In cases where the extremities are suddenly exposed to intense cold, as in frostbite and some cases of immersion foot, the relationship is less obvious.

THE WORKMAN WITH CORONARY OCCLUSION

THE insatiable demands of war-time industry have necessitated a drastic revision of our ideas concerning the standards of fitness requisite for an employee, and, while much of this war-time practice will be discarded when a reversal to peace-time conditions takes place, much has been learnt that will permanently change our standards. Thus a large American company [4] which before the war listed arteriosclerotic heart disease as one of the criteria for the rejection of applicants for employment, is now employing such persons and finding that they "can be continued in employment without great risk." As Gardiner [5] has pointed out, however, the published work contains more generalities than precise formulæ on the subject. Interest therefore attaches to a study of 84 employees at one of the famous Kaiser shipyards who had coronary thrombosis and were followed for an average period of 11·7 months after their coronary accident.[6] Fourteen of the patients died, and of the remaining 70, 20 made a complete symptomatic recovery, 22 had angina pectoris, 12 had congestive failure, and 13 had angina pectoris and congestive failure. At the end of the period of study 30 of the men were working, including 10 of those who had made a complete symptomatic recovery, 11 of those with angina pectoris, 2 of those with congestive failure, and 7 of those with both angina pectoris and congestive failure. It was noted, however, that of the 10 men with complete symptomatic recovery who were not

1. Lloyd Jones, T. R., Maitland, F. G., Allen, S. J. *Lancet*, 1945, i, 368.
2. Thomson, R. J. C., British Encyclopædia of Medical Practice, London, 1937, Vol. V, p. 440.
3. Lesser, A., *Ann. Surg.* 1945, **121**, 257.
4. Crain, R. B. *Indust. Med.* 1943, **12**, 368.
5. Gardiner, H. G. *Ibid*, 1943, **12**, 830.
6. Levine, E. B., Phillips, E. *Amer. Heart J.* 1945, **29**, 588.

working, only one was not doing so for medical reasons, while all of the 12 with angina pectoris who were not working had stopped because of their angina. It is noteworthy that 20 of the 48 men with angina pectoris, congestive failure, or both in mild degree, were able to resume work. Of the 30 survivors who were working at the end of the period of study, 19 (including 15 manual workers) were working at the same job as before their illness, the remainder having taken up lighter work.

Thus the mere fact that a man has had a myocardial infarction does not necessarily disqualify him from employment, even in a heavy industry. Careful choice of occupation and careful supervision once this has been resumed are obviously required, and the possibility of sudden death in such people must always be borne in mind. An experienced industrial medical officer [7] has ventured the opinion that "as a group, cardiacs are more honest and attentive to their work and occasion no more lost time than so-called normals—moreover they show great willingness to attempt any kind of occupation within their limitations." These willing workers should therefore be given every facility to take up an occupation that is best suited to their capabilities.

BABEL IN HOSPITAL

Two years ago a peripatetic correspondent [8] told a little story about an Italian prisoner in hospital who could not speak English, while the medical and nursing staffs had not a word of Italian—and this was in one of our old University towns. A plea was made for a hospital multilingual phrase-book or series of phrase-books to cover this deficiency. It brought a letter from Dr. S. Chalmers Parry [9] drawing attention to his unpublished *Polyglot Medical Questionnaire*, which consists of 191 items, mainly words not phrases, in 27 languages. An editorial comment on this letter said that the Norwegian Red Cross had sent all the principal hospitals in Great Britain a questionnaire in Norwegian and English for use with Norwegian patients. Unfortunately it contains only 22 phrases. The attention of the committee of the International Red Cross in Geneva was drawn to our correspondent's suggestion, and they decided to put it into effect. The League of Red Cross Societies, of 8 rue Munier-Romilly, Geneva, have now prepared two series of phrases, a *Multilingual Medical Phrase-Book*, consisting of 123 phrases, mainly medical, and a *Multilingual Phrase Book for Use in Red Cross Transit Stations*, consisting of 106 phrases, some medical and some for the use of travellers. These phrase-books are issued separately in 13 tongues: English, French, German, Italian, Spanish, Greek, Dutch, Hungarian, Norwegian, Polish, Rumanian, Russian, and Serb. The phrases are in the same order in each pamphlet and are numerically keyed, like the menus on some liners with Asiatic stewards. The doctor or the nurse points to the number opposite the phrase, and the patient looks up that number in his own book, and vice versa—called by Dr. Parry the "digital method"—so avoiding the pitfalls of pronunciation. These phrase-books not only meet a pressing war-time need but will be of great value in peace-time among merchant seamen. The only obvious drawback is that they do not help a blind patient. The British Red Cross should certainly apply for a set for every British hospital, though a few of the English phrases, such as "Look out! I passed blood," need editing.

Some of the ancestors of the present phrase-books are worth a glance. In 1890 Dr. Theodore Maxwell published his *Terminologia Medica Polyglotta: A Concise International Dictionary of Medical Terms*, in which he used French as the key-tongue. All the items in seven languages, French, Latin, English, German, Italian, Spanish, and Russian, were listed alphabetically together. Thus, wanting to translate "hobnail liver" into Italian, the reader looks up the phrase in his own language and finds the French "foie granuleux." He then looks up "foie" and finds the Italian "fegato," and turns next to "granuleux" and finds "granuloso." Finally he has to remember whether the adjective precedes or follows the noun in Italian—all very cumbersome and hardly conducive to conversation. Then in 1909 Dr. J. Meyer, of Berlin, published his *Pocket Medical Dictionary* in eight languages (English, German, French, Italian, Japanese, Russian, Spanish, Hungarian), which was reviewed in these columns.[10] The same awkward method was used, but the key-tongue this time was German. The reviewer suggested the desirability of including some phases and sentences. Neither of these works are of much use unless the would-be speaker has a working knowledge of the grammar and syntax of the foreign language concerned. The nearest approach to the Red Cross phrase-books has been the series of English, French, German, and Polish nursing phrases, side by side, together with their pronunciation, issued in four consecutive numbers of the *Nursing Times* [11] under the title of "Foreign Phrases for the Nurse."

SAFETY OF ICE-CREAM

To the public health worker ice-cream has much in common with milk. It is eaten mainly by children, it is a rich bacteriological medium, and it is known to have carried many of the same diseases as milk. In this country the dangers of contaminated ice-cream have been given small consideration and it is only when conditions of manufacture are grossly insanitary that the Food and Drugs Act, 1938, is called on to protect the public. The misconception that freezing destroys all bacteria persists, even among those who should know better. In America ice-cream made from unpasteurised milk has been found to contain as many as 37 million organisms per c.cm.—about the same number as sewage. Diseases which may be spread by ice-cream include the enteric group, dysentery, and scarlet fever, and recent reports in the daily press suggest that staphylococcal food-poisoning must be added to the list. With these and other points in mind, there appears to be a case for tightening up legislation on the methods of manufacture and dispensing of ice-cream. A new order issued by the Ministry of Food [12] should help to prevent the danger to which consumers of ice-cream may be exposed if the dried egg used in its manufacture is infected. What the chances of such infection are has not yet been reported, but some samples of dried egg do contain salmonella organisms. The order prohibits the use without a licence of dried egg in the manufacture of synthetic cream, ice-cream, and baker's cream filling. Under this licence manufacturers must pasteurise a mix which contains dried egg; not more than two hours must elapse between reconstituting and pasteurising the dried egg; and the treated product must not be exposed to a temperature at which pathogens can multiply. These provisions are reasonable but until the authorities in this country release more information about the bacteriology of dried egg many will fail to see the reason for them. Efficient pasteurisation of a substance like dried egg is not easy and it will be difficult to know if the order is being properly carried out. The new regulations are aimed at new dangers; they still do not ensure that the freshly painted barrows will contain wholesome or safe food.

RELEASE OF ARMY DOCTORS

THE Central Medical War Committee is informed by the Director-General of Army Medical Services that instructions have now been issued for the release of medical officers in groups 12 to 16 to be effected before the middle of October.

7. Priest, W. S. *Indust. Med.* 1943, **12**, 828.
8. *Lancet*, 1943, ii, 616.
9. *Ibid*, p. 750.
10. 1909, ii, 1441.
11. Aug. 10, 17, 24, 31, 1940.
12. Dried Egg (Control of Use) Order, 1945. No. 627.

Special Articles

MEDICINE AND THE LAW

Hospital Doctor's Absences

IN a doctor's unsuccessful libel action against a newspaper at Birmingham assizes lately the chief issue was the extent of absence from duty that the medical superintendent of a hospital may permit himself. It was on this issue that the newspaper won the case, though, as will be seen, its comments on the plaintiff had made no mention of his absences but had been couched in much vaguer terms. It may well be that, if the newspaper had been more specific in its criticisms, the plaintiff doctor would not have felt obliged to bring his action.

The "gossip column" of the *Walsall Observer and South Staffordshire Chronicle* contained paragraphs which included the following:

> "Dr. Clayton's successor as medical superintendent at Manor Hospital has not been a success, and this week town councillors in committee were faced with the painful necessity of calling for his resignation. So as to expedite his departure, it was decided to give him a cheque for his salary for the next three months and to proceed at once with the appointment of a successor. So far as we know, there is no reflection on his professional ability: but the councillors were conscious of their responsibility for the maintenance of the highest standards of service at the hospital . . ."

Dr. Isaac Rose, the medical superintendent thus referred to, complained that these words were defamatory. The newspaper pleaded justification. Dr. Rose gave evidence of certain incidents indicating friction at the hospital. The newspaper did not rely on these, but upon the fact that the plaintiff left the Walsall hospital at weekends, and on one occasion for a period of ten days in order to visit his parents at Leeds. There was evidence that, on taking up his appointment at the hospital, he had asked about week-end absences and had been told by the medical officer of health that there would be no objection to occasional week-ends, but that the hospital committee would certainly not agree to his absenting himself at every week-end. Dr. Rose went to Leeds because members of his family were ill. The committee felt obliged to remind him that his primary duty was to the hospital patients. There were complaints that, when absenting himself, he left no forwarding address or telephone number; it was said that during one period of absence one resident doctor had left the hospital and another had become ill.

The judge (Mr. C. T. le Quesne, KC, sitting as commissioner of assize) held that the ten-day absence was a "very serious matter." No doubt Dr. Rose was in great anxiety about the health of his brother, sister, and parents; he was a dutiful and affectionate son and brother. There was no evidence that any hospital patient had suffered injury through his absence, but, in the judge's opinion, "the welfare of the hospital may have been impaired by such absences and they were not compatible with the high standards of service maintained." The words complained of in the newspaper paragraphs were substantially justified; Dr. Rose had not been libelled.

Doctors and Divorce Law

When the "Herbert" Act made divorce possible on the ground of incurable insanity, there were symptoms of strain upon the loyalty of the doctor to his patient. The evidence of insanity would probably have to come from someone who stood in a professional relation towards the insane person; it was likely to place him in an awkward position if, having the care of a helpless invalid, he was expected to assist in depriving the latter of rights which had hitherto been regarded as inalienable. On the whole the difficulty has been surmounted in practice without much friction, but there are occasional reminders that the decisions of Parliament do not automatically abolish professional instincts.

In a divorce case heard by Mr. Justice Hodson in July it appeared that the medical superintendent of a mental hospital had refused to allow a doctor sent down by the Official Solicitor to examine one of his patients. The medical superintendent, it was said, did not agree with the law allowing divorce for insanity and had consequently been unwilling to do more than was absolutely necessary to comply with what was required of him. He did not appreciate, he said, that the Official Solicitor was acting for the patient; he was under the impression that he was acting for the husband who was seeking a divorce. The judge, in commenting upon this mistaken attitude, had unfortunately to point out that the medical superintendent had gone further. In his desire to obstruct the husband's petition for divorce, he had written letters to the husband, one of which contained an entirely unjustifiable innuendo. The husband, a perfectly respectable man, was lodging with a widow. The letter unmistakably hinted that the widow was his mistress and had supplanted the wife.

This over-zealous championing of the cause of the patient was plainly indefensible. Having pointed out and reprehended the medical superintendent's indiscretion, the judge was happily able to announce that the medical superintendent now undertook not to hinder the progress of divorce proceedings in future. Any obstructive tactics of this kind, said the judge, whether on the part of a doctor or of any other citizen, run grave risks of proceedings for contempt of court.

Thus the position is made clear. We may dislike a law, but there are limits to what a conscientious objector may do. Law and morals may seem sometimes to be in conflict. If we feel it deeply enough, we refuse to collaborate. Indeed there is judicial precedent for public protest. When the late Lord Phillimore was first appointed to the High Court bench and it fell to him, in the course of his routine tasks as vacation judge, to make absolute a number of decrees *nisi*, he allowed himself the luxury of announcing that his views of divorce made the performance of this judicial duty distasteful. Doctor or judge, we are bound by the decisions of a majority of our representatives in Parliament. As good citizens, we obey the law; as human beings, we must have our grumble.

Contraceptives and Consummation

An admirable article in the *Solicitors' Journal* of July 28 contains some expert legal comment on the case of Cowen *v.* Cowen, discussed in these columns last week. The *New Statesman and Nation* of July 21 had stated that the decision in this case establishes that a woman is assumed under a marriage contract to have a legal right to bear one child and to terminate the contract if her husband, being sexually potent, denies it to her. This, says the *Solicitors' Journal*, is not correct. It may be what the Matrimonial Causes Act 1937 intended, but it is not what the recent decision establishes. If the husband grants his wife one occasion of full intercourse without the use of contraceptive appliances or methods, he has clearly consummated the marriage. If no child is conceived as the result of that occasion, and if the husband refuses further intercourse without contraceptives, the wife has no remedy. The Act does not give the wife the legal right to bear one child but the legal right to one chance to bear a child. As the *Solicitors' Journal* observes, the husband's refusal to let his wife have a child seems more naturally to form the foundation for a charge of cruelty. Finally, our learned contemporary continues, the decision is consistent with the fact that a spouse cannot obtain a divorce on the ground of the partner's sterility or barrenness. In cases of sterility or barrenness there may be unimpeded transmission of semen, but non-conception is due to natural physical disability, not to an artificial frustration. The marriage has been consummated, but the spermatozoa have remained ineffective. The couple have done what they could, and neither is to be penalised for a physical defect of which neither knew before marriage and for which, it may be, neither was to blame.

Such are some of the considerations to which the Court of Appeal's judgment gives rise. Doubtless their significance will be reviewed by the Royal Commission which is studying the problems of population.

COURSE ON INDUSTRIAL HEALTH AT BIRMINGHAM.—From Aug. 27 to Sept. 8 a course in industrial health is being held at the Birmingham Accident Hospital and Rehabilitation Centre. Further particulars will be found in our advertisement columns of last week.

In England Now

A Running Commentary by Peripatetic Correspondents

To the physicists who were not in on that mightiest piece of planned research the news of the atomic bomb must have been even more astounding than to the rest of us. For when some big advance in our own particular field of knowledge first penetrates to our ageing brains we are apt to be staggered that it has been brought about—almost under our noses, so to speak—without our being aware of its growth. One has the same feeling on returning from a holiday in mid-August and looking at the vegetable-marrow in the garden to which one said good-bye a month before. My hat, what a whopper these physicists returned to! It is, of course, true that knowledge is growing with great rapidity—like the marrows—and although some branches of it have been kept back by the war others have been greatly stimulated by it. But knowledge does *grow*, it never leaps forward, and few investigators have ever had the luck to make a discovery which has not got roots in the past. This latest discovery has roots extending back to the Cavendish Laboratory and far beyond, and one likes to think it will grow on to bear fruit of a very different kind.

* * *

When I was at school during the last war, Speech Day and strawberries arrived together. Speech Day brought parents, and parents brought extra pocket-money just at the right moment when the strawberry season was at its height. And I am not being a stuffy old *laudator tempori acti* when I maintain that those strawberries were very different from the strawberries of today. Their essential difference was that they would not travel. Even when carried with the most loving care the mile back from fruiterer to School House, the bottom of the bag became red, sodden, and untrustworthy. The palm of the hand became wet, stained, and scented. For they had fragrance: you could tell blindfold when there were strawberries for tea. Deliquescent between tongue and palate, each had a distinctive bouquet rather than a taste. Indeed an uncle of mine once warned me never to go on eating strawberries once they had begun all to taste alike: it was criminal waste. And he added that he'd kick my bottom and cut me out of his will if he ever caught me mashing them up with cream and sugar into a fool. And he was perfectly right. You remember, too, what Carlyle or Browning or Tennyson or the whole lot of them said about God and His Best Effort? Well, I can't imagine what my uncle or Carlyle and Co. would say about the strawberry of today—if they had to tug out that white tapering core, like the root of a canine tooth, only to be left with an anæmic (so-called) pulp which has to be chewed or carved with a spoon and which has very little taste and no aroma!

While I am about it I should like to register a grumble about another fruit that has changed for the worse: the tomato. Before the tomato was popularised—say before 1910 to be on the safe side—it was a thin-skinned fruit, very soft and pippy, and difficult to eat without splother. They did not travel well either, except at political meetings when they flew wing-tip to wing-tip with stale eggs. Nowadays if you throw a ripe tomato at a chap it just bounces off, which is silly. It has also lost its scent. You know that greenery-yallery smell you get even today in a greenhouse full of tomato plants? Well, the ripe fruit smelt like that and tasted like that too. It has now lost this distinctive taste and aroma, although I admit it has not yet—thank Heaven—acquired the taste (or the colour) of tinned tomato soup, which is unique. No; it is practically tasteless, and I am quite sure it is included in salads only because of its brave pillar-box redness. Were it green like the lettuce or white like the onions and cucumber, who would bother with it?

What I want to know is: Are there any of those old-time strains of real strawberries and real tomatoes still flourishing in some old-world garden that hasn't kept up with the times? It's no good asking the professional growers. They reply scornfully that there's no demand for them; these days soft fruit must be able to travel. But my feeling is that if you and I and a few other readers kicked up a fuss somebody would do something about it. Then we should be able to enjoy these delights once again. You and I don't want them to travel, do we? At any rate no farther than from our backyards to our tables. Let me know what you think about it.

* * *

She was young and very pretty and spoke fair English. Could I refill her pneumothorax which had been kept up for four years? The British officer who brought her in explained that she was a displaced person, an Esthonian by birth. On physical examination I found no sign of disease and an X ray revealed one lung partly collapsed and with no obvious activity. So I said that I did not propose to refill for a time but would take another film in a fortnight. She was somewhat alarmed, as I gathered that German doctors had done the refills and she thought they were still needed. I asked her where she had learnt English and she said in Leipzig, so I pursued my inquiries. Her parents had lived in Esthonia and her father had been a Russian of the old régime. She supposed they were now in Siberia and had had no news of them for four years. In 1941 she had been separated from them when fighting began and later she had gone to Leipzig. When the war came that way she had joined the enormous masses in flight to the west. Now she was in the British zone near the Elbe, working as interpreter in a camp containing thousands of refugees—Poles, Russians, Esthonians, Letts, and others. I asked her whether she would go back to her home and she said she neither could nor would do so if it were possible to avoid it. "You see," she said, "I am an Esthonian; during the Swedish occupation we were happy, but since I was born we have been liberated by the Versailles Treaty, then by Russia, then by Germany, and then by Russia again. We did not want to be liberated. I want to be an Esthonian and I do not know where to go so that I can remain one." I had no answer to give. In a hard world a pretty young woman with no resources and no home cannot feel very safe. I never saw her again.

Another young woman had been a medical student in Riga; she and her parents hid for some weeks in the woods when the war began. They then trekked west together with her brother and his three children. All her other relations had disappeared. Her father had been manager of a dairy farm and was now working on the roads under our direction.

A young German doctor, with duelling scars on his cheeks, wished to show us an invention which might be useful to the British medical services. He was very ingratiating and explained how much better we should understand the appliance if he could be allowed to fetch a working model from a town in Thuringia. I felt that there was a catch somewhere and it transpired that his parents were there and he wished to bring them away. We hedged about this. He then said that he had been interested to hear that we might be using Germans in the war against Japan. I expressed astonishment and he replied naïvely that the future looked rather bleak for people such as himself who had little to do. His self-pity took no account of the misery Germany had brought on the world. It seemed hopeless to attempt any explanation or rebuke.

Another man in a book-shop had done a big export business before the war, mostly to America, England, and Scandinavia. He was a Dane by birth and had been naturalised in Germany. At first sight the shop was empty but in the back rooms I found many interesting things. I told him that for years before the war the German output of medical and scientific books had fallen off badly, both in quality and in quantity. He agreed immediately when I said this was Hitler's work. He also said that his Scandinavian clients in particular had made repeated complaints about it in the years before the war. I wonder how many in England realise the tremendous opportunity we shall have in the next few years to acquaint the Continent with our advances in medicine, science, and other things. The time has gone by for bowing down and worshipping everything that comes from Germany. It would be of political advantage to us and of enormous benefit to Europe if more of its scholars could study in our centres of learning, but they will need more encouragement than they had in the past.

Letters to the Editor

FILMS IN MEDICAL TEACHING

SIR,—In his letter of July 21 (p. 90) Dr. MacKeith says that the British Council "makes films for overseas use of a discussive nature, and not for direct teaching, which forms no part of their mandate."

This statement is not quite correct. It is true that the two British Council medical films which have been completed and exhibited in this country have not been teaching films, but have attempted to give cross-sections of the work of particular kinds of special surgical services. However it is definitely a function of the British Council to provide teaching material—and, indeed, teachers—for overseas, and a series of medical teaching films has long been under consideration and will shortly go into production. These will be produced for distribution overseas, but there is no bar, other than shortage of materials, to the use in this country of British Council teaching films of any kind. British Council films on medical subjects will be very few in number, in relation to total needs, and are not likely to affect Dr. MacKeith's main contention that British film production has so far been "sporadic, haphazard, and uncoördinated."

It may be of interest to add that about 3 years ago the Council was considering, on the initiative of Dr. J. Yule Bogue, sponsorship of a series of about 200 preclinical medical teaching films, but for various practical reasons this more ambitious scheme had to be abandoned.

On the larger question of a centralised plan for medical film production, it is undeniable that the present output is the result of a strange, and not always readily ascertainable, mixture of motives and interests. However, it might be said of another teaching medium—the medical book—that production is "sporadic, haphazard, and uncoördinated," but this does not seem to have affected the supply. Perhaps increasing demands for medical teaching films will be followed by an increased rate of production.

Can it be said that a basis for the sober assessment of the value of medical teaching films yet exists? Opinions on this medium appear to range from the uncritically millenarian to the derisive. Medical teachers, from whom the most useful views might have been expected, seem to have been silent on this question. This negative attitude may be a reaction against the messianic approach that has become associated with the advocacy of the film as a teaching medium.

There are several problems in this connexion which do not seem to have received a great deal of attention. For example, what is to be the effective life of a medical teaching film? Would the cost of producing new "editions" lead ultimately to an equilibrium at which the bulk of medical teaching films were always a few years out of date?

It seems certain that there must in future be a tendency to make increasing use of films in medical teaching, but whether centralisation would help very much in the present experimental stage is at least arguable.

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British Council.

London, W.1.

TREATMENT OF MALARIA

SIR,—We have read with great interest Dr. Alec Wingfield's letter in your issue of July 21 (p. 94). He treated malaria by the intramuscular injection of solvochin 2 c.cm. twice daily for 4 days, followed by oral mepacrine for subtertian, and oral quinine for benign tertian patients. A follow-up by correspondence of 79 patients showed in 51 who replied a relapse-rate of 28% on the worst interpretation of the figures and 16% on the best. On these grounds Dr. Wingfield hopes that a clinical trial on a larger scale may be undertaken. Therefore it may be of interest if we comment on his figures, and give a brief interim account of a much larger trial that we have taken part in; our relapse-rate was better than Dr. Wingfield's best and all our drugs were given by mouth.

Our comment is that Dr. Wingfield should have set forth his relapse-rates for subtertian (*P. falciparum*) and benign tertian (*P. vivax*) separately. As he himself said (*Lancet*, June 17, 1944, p. 804): "... subtertian is as a rule an easy infection to treat and therefore does not present a very severe therapeutic test." As far as relapses are concerned, we agree with this view, especially as Dr. Wingfield gave his subtertian patients mepacrine 0·1 g. t.d.s., which would virtually eliminate relapses from his subtertian group (see Fairley, *Trans. R. Soc. trop. Med. Hyg.* 1945, **38**, 311; and *Lancet*, Feb. 10, 1945, p. 179). In his previous letter (*Lancet* of June 17, 1944) Dr. Wingfield referred to a total of 32 subtertian patients having so far been treated by this method; if many or all of these are included in the 79 to whom he addressed his inquiries, his relapse-rate for benign tertian malaria will certainly be a good deal less favourable than the rates of between 16% and 28% which he quoted for the whole group.

Our trial was restricted to proved cases of relapsing benign tertian malaria. During May and June, 1944, 1410 such cases were treated with one or other of the two courses below:

(1) *Mepacrine (M) course.*—0·2 g. of mepacrine was given every 6 hours for 48 hours; then 0·1 g. three times a day for 10 days. The course lasted 12 days and the total amount of mepacrine was 4·6 g.

(2) *Quinine pamaquin (QP) course.*—Quinine, gr. 10, and pamaquin, 0·01 g., were given three times a day for 10 days.

Records were examined after a follow-up 5 months later (War Office. 1945. DBR. Interim Report on Malaria Relapses after Treatment with Quinine and Synthetic Quinine Substitutes. See *Army med. Dept. Bull.*, June, 1945, no. 49, p. 6, article 363). In 176 of the patients the first attack of malaria developed after their return to this country. Of these, 100 were treated with course M and 29 subsequently relapsed; 76 were treated with the QP course, and only 14 relapsed within the period of observation (relapse-rate = 18%). The difference between these relapse-rates is statistically significant; this means that the odds are heavily against such a result having happened by chance alone, and, other things being equal, strongly suggests that the QP course of treatment was the more effective in preventing relapses.

Men whose first attack had developed abroad formed a much larger group (1234 cases). They also were treated with course M (650 cases) or course QP (584 cases), and again the follow-up showed fewer relapses after QP treatment; the findings, which are given in the table, show a relapse-rate of only 10·3% on the QP course.

RELAPSES OF VIVAX (BT) MALARIA AFTER TREATMENT WITH MEPACRINE OR QUININE-PAMAQUIN COURSES

Relapses after treatment	Course M		Course QP	
	No. of cases	% of all cases	No. of cases	% of all cases
None	429	66·0	524	89·7
1	184	28·3	56	9·6
2	33	5·1	4	0·7
3	4	0·6	0	..
Total relapsed cases	221	34·0	60	10·3

This follow-up was carried out five months after the patients had been treated; so far, the QP course appears to have been more successful than course M, but it is too early to say that radical cures have been obtained since BT relapses may occur up to 2 years after the last infection.

But there is already an indication that our ultimate figures are likely to be at least as good as Dr. Wingfield's final relapse-rates for benign tertian alone. For uncomplicated relapsing benign tertian malaria, therefore, we see no present indication that there is any advantage in or reason for the use of solvochin injections or any other form of parenteral therapy. We have no doubt, of course, that if malaria does not respond quickly to oral treatment, if there is vomiting, or if the Tanret test remains negative (*Lancet*, 1943, ii, 317), there should be no hesitation whatever in adopting parenteral therapy; otherwise lives may be needlessly lost. But this is not Dr. Wingfield's argument.

Two important points must be borne in mind in treating patients with the QP course. The first is that the patient must be kept under strict medical supervision throughout treatment, and if cyanosis or abdominal colic appears pamaquin should be discontinued and the course completed with quinine only. In 295 patients under our personal care only 3 had to have treatment interrupted in this way; medical officers in charge of other groups, perhaps being more cautious than was really necessary, stopped the QP course in from 2 to 4% of their cases. The second is that Indian troops do not tolerate pamaquin as well as British; for this reason, Indians should receive only 0·02 g. instead of 0·03 g. of pamaquin daily. Pamaquin hæmoglobinuria has been described in Indians; it appears usually on the 4th or 5th day after pamaquin has been started. It should be treated like blackwater fever.

M. F. H. KELLEHER.
KEITH THOMPSON.

WAR AND THE BIRTH-RATE

SIR,—With reference to the leading article of July 7, the following facts regarding fertility trends in this country during the last 75 years may be of interest.

1. The fertility-rate—i.e., live births per 1000 women aged 15–45—which was 153·7 in 1871, has, except during periods of war and trade revival, steadily fallen since, and just before the war was only 38% of that value.

2. Fertility has decreased in each age-group and in all classes of the community, being lowest among the professional and well-to-do and highest among labourers and unskilled workers.

3. Between 1871 and 1931, the year of the last census, both the married and total female populations aged 15–45 nearly doubled, while annual marriages increased by about 63%. The fertility-rate however declined by 58%, with the result that the births during 1931 were only 75% of those in 1871.

4. During the decennium 1921–31 fertility fell below 78·9, the rate required to replace the existing potential mothers aged 15–45 in successive future generations, and just before the war it was 61·4, or 78% of this value.

5. Apart from the decrease in fertility at each age-group the resulting fall in the birth-rate has caused the gradual ageing of the female population aged 15–45, which has further reduced their fertility; there has also been a slight increase in the average age at marriage.

6. The average number of children aged 0–15 per family fell during the period 1871–1931 from 3·1 to 1·9.

7. Since the outbreak of war fertility has of course been adversely affected by the absence of the male on active service, and as the table below shows this was reflected until 1942 by a falling birth-rate in spite of a substantial increase in marriages. Since that year however the birth-rate has increased while marriages have declined. It will also be noticed that as a result of the war the illegitimate birth-rate has increased and in 1944 was double that of 1939.

Year	Marriage-rate	Birth-rate		
		Legit.	Illegit.	Total
1939	17·4	14·3	0·6	14·9
1940	19·3	14·0	0·6	14·6
1941	22·0	13·4	0·8	14·2
1942	20·7	14·9	0·9	15·8
1943	18·2	15·4	1·1	16·5
1944	16·0	16·7	1·3	18·0

Note.—Rates (per 1000) are based on the estimated mid-1939 population; marriages (provisional figures) are the average of the two previous years to relate with births.

8. As your article points out, this increase in fertility, which follows that after the last war but on a reduced scale, is striking and is not confined to this country. Apart from the causes you suggest, may not this rise also be partly due to the granting of marriage and child allowances during the war? In Germany similar measures before the war resulted in the birth-rate increasing from 14·7 in 1933 to 18·8 in 1937. Another reason may be a more optimistic belief in the future resulting from the successful turn in the course of the war. All this is mere conjecture of course in the absence of the necessary social data, and it is to be hoped that the statistics provided by the next census will throw more light on this subject. Whether the present trend is definite or merely transitory is of vital importance to the future of this country and the Empire. Under present conditions should the birth-rate increase to 19·3, involving about 54,000 additional births a year, replacement of the present female population aged 15–45 should be assured and the threatened decline in population averted.

Statistical section, Public Health Dept., County Hall, SE1. C. A. GOULD.

VITAMIN-C SATURATION TEST

SIR,—L. J. Harris, in his review of the vitamin-C saturation test (*Lancet*, 1943, i, 515) states that although no extensive tests have been completed on adult subjects, "the observation of a 7–10 day deficit as characteristic of advanced vitamin deficiency (developed scurvy) rests mostly on observations on adults." The following data, obtained by testing 15 apparently healthy young adults (Indian troops) are therefore of some interest. Harris's technique was followed exactly.

Day of response	5	6	7	8	9	10	11
No. of cases	2	4	3	3	1	1	1

These subjects were selected at random from a unit where a dietary survey on a company basis was being conducted. The average amount of ascorbic acid calculated to be in the uncooked food did not exceed 30 mg. per head per day. Very little fruit was consumed, and all vegetables were boiled thoroughly, so fairly heavy cooking losses may be assumed.

These men, and many others from the same unit, were carefully examined for clinical evidence of scurvy, with entirely negative results. Their health record was good, they performed hard physical work, and there was no evidence of delayed healing of wounds. Many of them suffered from pyorrhœic gingivitis, which was unaffected by intensive vitamin-C therapy. We have, on occasion, inspected other Indian troops whose vitamin-C intake had been even lower for considerable periods, the average daily uncooked food supply not providing more than 10–15 mg. as calculated. No case of scurvy, even in the mildest form, has yet been encountered.

Our results, although on a relatively small series of tests, confirm the conclusion of previous investigators (e.g., Harris, *Lancet*, 1942, i, 644) that a poor vitamin-C status, as revealed by the urine test, is not necessarily indicative of actual scurvy having developed. It seems that developed scurvy, as described among Indian troops in Mesopotamia during the last war, or in the Hissar famine by C. M. Nicol (*Ind. med. Gaz.* 1940, **75**, 662), must result from an extremely severe and long-continued lack of vitamin C.

It should be pointed out that the figures given above are not representative of the vitamin-C intake of Indian troops as a whole, but are exceptional. The Indian soldier is now fed much better than he was in 1916.

We wish to thank the Director of Medical Services in India for permission to publish this note, and the Roche Scientific Division (Bombay) for supplies of 'Redoxon' &c.

A. M. THOMSON.
M. W. WILLIAM.

TRICHLORETHYLENE IN THE SURGICAL WARDS

SIR,—In minor surgical procedures and the aftercare of the surgical patient there is a wide field for the relief of pain, discomfort, and anxiety. At present, when alleviation is attempted at all, the choice usually lies between morphine gr. ¼, which is often inadequate, and full-scale anæsthesia which requires special arrangements and may be undesirable. It seems worth while to draw attention to the value of trichlorethylene ('Trilene') analgesia, using a Freedman inhaler in this connexion.

The first convoys of patients with painful wounds and adherent dressings, which had often to be examined soon after arrival, proved the value of this method, but there are many other applications in the general surgical field—painful first dressings, such as those after amputation or mastoidectomy; removal of tight plaster casts; changing of drainage tubes, &c.; and even minor surgery in suitable subjects.

Exponents of the art of analgesia will know that good results are uniformly obtained only when the attendant is able to "sell" the idea to the patient, and ensure his coöperation in advance. To attempt analgesia only when it has become obvious that some relief must be offered to the over-distressed patient is to invite failure: it is better to resort at once to full-scale anæsthesia. For this reason the inhaler is best left in the ward in the sister's charge, ready for use whenever needed.

Two other inhalers for use with trilene have been developed. Dr. H. R. Marrett (*Brit. med. J.* 1942, i, 643) described an air vaporiser with which full anæsthesia can be obtained. Dr. Basil Hill (*Proc. R. Soc. Med.* 1944, **37**, 475) introduced an inhaler designed for auto-administration and operated by a hand-bulb, which is also suitable for dental analgesia. Details of the Freedman inhaler were published in the *Lancet* of Dec. 4, 1943, and it has since been adopted for use in midwifery by the London County Council. Using a mask attached directly to the apparatus, the patient draws air through an unspillable bottle which cannot be overfilled. An air-hole is provided for the patient to occlude with a finger, as on the Minnitt and similar nitrous oxide and air machines. The sound of the simple inspiratory and expiratory valves at work gives an indication of the function obtained. Like all machines working on a fixed percentage the Freedman cannot offer 100% success, but its simplicity makes it eminently suitable for use without expert supervision, while neither anæsthetic nor toxic dosage can be obtained. Moreover it is compact, portable, and inexpensive of purchase and operation.

I am indebted to Messrs. A. Charles King Ltd., for the loan of the apparatus with which the experiments were begun.

Worcester. E. F. GLEADOW.

PLASMA-FIXATION OF SKIN-GRAFTS

SIR,—Since the publication of my article on this subject in September, 1944 (*Lancet*, 1944, ii, 363), experiments have been carried out with other fixatives, and slight modifications of technique have been made.

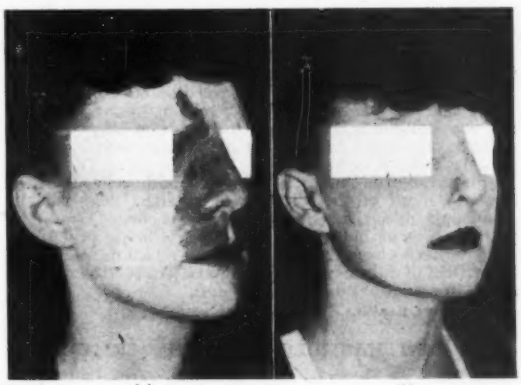
Basically the plasma-fixation method rests on the theory that intermediate and full-thickness grafts can be applied without suturing, and their restoration expedited, if the under surface of the graft is painted with white-cell extract and the recipient surface with plasma, both obtained from the patient's own blood immediately before operation (for details see previous paper). The graft is outlined according to an exact pattern of the defect, cleansed with ether, and painted with rubber cement, while the surrounding skin is powdered with soapstone and sulphadiazine. The recipient area is also thoroughly cleansed and dried, and rubber cement is applied to its bordering skin.

The graft is cut with a dermatome with mirror attachment, prepared in advance as follows. After application of a light coat of rubber cement, the drum is rolled on a layer of tulle which also receives a thin coating of cement. When the cement is thoroughly dry, the drum is autoclaved for 24 minutes at 20 lb. pressure and 248° F, thereby vulcanising the rubber. As the graft is cut, it adheres to the rubberised tulle on the drum and there is no contraction or mutilation from handling.

The defect is painted with plasma and the raw surface of the graft receives a coating of white-cell (corpuscles) extract. The graft is carefully fitted to the edges of the defect and rolled into place. The overlapping tulle, which adheres to the cement-coated surrounding skin, is subsequently removed with sulphuric ether.

Comparison of fixatives.—In an effort to determine the merits of other combinations, as compared to our use of plasma and white-cell extract, an experiment was carried out on 60 patients. In 20, purified thrombin was applied to both graft and defect. In a second series of 20, purified thrombin was used on the graft and patient's plasma on the defect. And in the third series, a combination of thrombin to graft and fibrinogen to recipient area. None of these combinations yielded as good results as the original technique employing plasma and white-cell extract; the latter appears to cause the least blistering and swelling, and grafts so treated seem to be least liable to infection. The purified thrombin alone gave the least desirable results: blistering and swelling were greatest in this group and there was more threat of infection; furthermore, it took longer for the graft to incorporate with the tissues. The combinations of thrombin and plasma, and of thrombin and fibrinogen, produced intermediate results, with a slightly better showing by the latter.

Modifications of technique.—The principal modification adopted since my last report is the use of pressure bandages. Some pressure seems distinctly desirable to hold the graft in position and immobilise it. Moreover,



(*a*) (*b*)

Nævus flammeus: (*a*) before, (*b*) after operation.

there appears to be less swelling, blistering, and susceptibility to infection when pressure is applied. A small but useful change is the use of 'Parloidan' instead of soapstone on the area surrounding the graft. Parloidan dries quickly, and can be applied more accurately than soapstone, which sometimes impinges irregularly on the graft, preventing its adherence to the dermatome.

Criticism and comment thereon.—There has been some complaint of difficulty in removing the rubberised tulle from the graft. This can be obviated by careful handling and the use of sulphuric ether. If the tulle is simply torn off, trauma is almost inevitable. It can be avoided by the invocation of a little patience. After removal of the tulle, the wound can be quickly and effectively cleansed of scabs and dirt with cetyl trimethyl ammonium bromide ('Cetavlon') in 1% aqueous solution.

I agree with some of the criticism directed against the mirror attachment on the dermatome. It is true that the experienced surgeon has no need of this, but it is an aid to operators who are less familiar with the handling of the instrument: the mirror enables them to watch the surgical field continuously without shifting position. If the dermatome is placed flat on the area to be removed, and a regular uninterrupted movement of the blade is maintained—not too fast—it will overcome many of the difficulties of which some surgeons complain in taking grafts by this method.

Experience lends no support to the argument that this technique is applicable to small wounds only. Most of my work has been with large grafts, covering the length of an arm or leg, almost the entire side of a face, or half an abdomen. Results have been uniformly good with very large grafts, as with small ones.

To forestall potential complications in areas where there is a likelihood of infection because of the nature of the wound or the necessity for protracted surgery, penicillin is given in doses up to 500,000 units a day, depending on the age and sex of the patient. Sulphamerazine is also used. It may be argued that this is unnecessary, but I have found it a valuable prophylaxis. Even where its bacteriostatic powers are not specifically indicated, penicillin performs a useful service by helping to dry the wound (acts as a vasoconstrictor) and, in some cases, by combating "secret" infections unknown to patient or surgeon.

Personal experience with hundreds of cases negates the criticism that grafts implanted in this way are more susceptible to infection. Of course the same preoperative precautions should be taken as in all surgery—i.e.,

the patient's general condition should be thoroughly investigated and appropriate studies of his blood chemistry made. There is more inherent risk of contamination in grafting, by whatever method, than where surgery terminates in a closed wound; and precautions must be correspondingly strict. If the necessary safeguards are taken, however, highly gratifying results, of which one recent example is illustrated here, are obtainable by the plasma-fixation method.

London, W1. J. EASTMAN SHEEHAN.

CANCER IN A NATIONAL MEDICAL SERVICE

SIR,—I think Dr. Gordon Ward (Aug. 4) is being unduly apprehensive. The directions for the use of cancer record cards do include a number of diseases which might well be excluded from the term "cancer," but the Cancer Act was deliberately drafted to include in its provisions patients suspected to be suffering from cancer as well as patients known to be suffering from cancer. The list in the directions was therefore purposely made very wide with the agreement of the Ministry of Health. The various conditions noted in the list are all recorded by some practitioners as being malignant, or as being precursive of malignant change. This does not at all detract from the truth of Mr. Stebbing's remark that "the disease starts in a small and localised lesion."

Ministry of Health. AMULREE.

OPHTHALMOLOGY IN THE ARMY

SIR,—It was somewhat of a surprise to read Major Hamilton's statement in your issue of June 9, that the Services had given him such little ophthalmological experience. I have talked with a number of Army ophthalmologists and we all agree that with the exception of cataract extractions and trephine for glaucoma there is very little in the field of ophthalmology that we have not encountered. We most of us have had our time in the wilderness when refractions formed our staple diet, but we have also had our turn in the fruitful land when there has been an abundance of good things. At the moment I have in my ward:

(*a*) 5 detachments. (*b*) 1 tumour of iris.
(*c*) 1 hypopyon ulcer. (*d*) 1 case of Coats's disease.
(*e*) 1 case of papillœdema (*f*) 1 case of lime burns of the cornea.

in addition to the more usual cases of penetrating wounds and traumatic cataracts. Of course, to have all of these at one time is in the nature of a banquet, but it serves to show what viands are available.

J. E. L. BENDOR-SAMUEL.

TOXICITY OF THIOURACIL

SIR,—In his letter of July 21, Dr. Pearson records the occurrence of agranulocytosis, with "a typical clinical picture" of this condition, following 400 mg. daily of thiouracil. He cites this case as an answer to Dr. Leys's question (July 7) whether "grave neutropenia" can occur with a thiouracil dosage of less than 800 mg. daily. The answer appears to be a definite affirmative, and further, as I pointed out at this year's meeting of the Association of Physicians, with doses as small as 100 mg. daily, after several months, even when an initial few weeks of treatment with heavy doses (e.g., 800–1000 mg. daily) have had no obvious deleterious effects on the polymorphonuclear cells. In one such case, the proportion of polymorphonuclear cells was maintained at 65% for eight months, and in the ninth month the patient developed pyrexia and sore throat and the polymorphonuclear cells had fallen to 13%, the total leucocyte count then being 3000 per c.mm. Recovery followed cessation of therapy and pentnucleotide injections. During the latter four months the patient had been taking only 200 mg. of thiouracil every other day.

Linsell (*Brit. med. J.*, 1944, ii, 598) records a case of clinical agranulocytosis, with a total of 1200 leucocytes per c.mm., and almost complete absence of polymorphonuclear cells, after four months' therapy with thiouracil, the dosage during the latter three months being 200 mg. daily. Gargill and Lesses (*J. Amer. med. Ass.*, 1945, **127**, 890) record a fatal case of agranulocytosis after a year of interrupted treatment with 200 mg. of thiouracil daily, there being no evidence of granulocytopenia until the week of fatal illness, when the leucocytes numbered 1000 per c.mm. and no granulocytes were present; a week before the total leucocytes were 6500 per c.mm. (the percentage of granulocytes then is not mentioned).

The most important precautionary lesson to learn from these cases of thyrotoxicosis treated with thiouracil is that normal blood-counts after an initial few weeks' treatment with large doses of thiouracil (e.g., 800 mg. daily) do not mean that severe clinical and hæmatological agranulocytosis will not occur subsequently with small doses (e.g., 100 mg. daily), although the chances of this are smaller than if large doses are continued.

Thiouracil is not a hormone, but it is used in an endocrine disorder, and as regards idiosyncrasy it appears to be true of thiouracil, as of hormone preparations, especially glandular extracts, that where an idiosyncrasy is present it may manifest itself even with very small doses. The least precaution one can take during thiouracil therapy is to have periodic leucocyte and polymorphonuclear counts done throughout the duration of therapy.

Harley Street, W.1. S. L. SIMPSON.

DEMOBILISATION OF DOCTORS

SIR,—The LANCET of June 9 has just reached me. I am amazed at the naïveté of the correspondent who signs himself "Serving Medical Officer" and expresses the gratitude of all temporary serving officers to the Central Medical War Committee for their communication of last May, in which the problems of release were enumerated kindly and sympathetically. What comfort the serving specialist could have derived from this blurb I cannot imagine. The general practitioner has at least the prospect of a whole fortnight of rehabilitation, in the form of a "refresher course." The document in question has been the object of derision and bitter comment in many medical messes overseas. Suggestions are invited. The only suggestion I have heard is that the present CMWC do resign, and that a competent committee be elected to replace it in such a way that Service medical officers may be properly represented. There would then be few difficulties in the demobilisation of doctors. It is a truism that no difficulties are so hard to overcome as those we make for ourselves.

From the very beginning, the call-up of medical men has been a muddle and tainted with unfairness and self-interest. Local medical committees have retained and regarded as indispensable certain medical men, who now complain that they are overworked. This can easily be put right. Alien medical men who have enjoyed our hospitality for so many years can now be given the opportunity to reinstate themselves in Central Europe by being mobilised in the Allied Commission, so setting free numbers of British medical men. Doctors previously rejected on medical or conscientious grounds can now be employed in the armies of occupation, whose medical services can be organised on an area basis, instead of by units. A strong CMWC can bring pressure on the War Office to abate the appalling waste of medical man-power in the Services. In Europe there is no longer any excuse for the familiar conditions where general hospitals and other medical units remain for months almost empty and idle. At no time in BNAF or in CMF has there been a shortage of medical officers—on the contrary, they have not been able fully to utilise the medical men they have had. In these theatres, the bulk of the medical and surgical work has been done by specialists, and the general duty medical officer has done only the simplest and most elementary procedures. In many units he is little more than a clerk and could be replaced by a clerk.

With an efficient committee it would appear that the majority of the medical men who gave up their practices in the first year of the war to enter the Services could now be permitted to return. They have borne the burden and heat of the day, while their indispensable colleagues have reaped a rich financial harvest, albeit at the price of hard work (but who minds hard work?). Now, let the boot be on the other leg. It is all a matter of organisation, and if the people who are at present

being paid to organise it cannot do so, let them give way to others. They have sat too long for any good that they have been doing. Let us have done with them!

Does the Editor of THE LANCET really think that the experience of "Medical Officer" is exceptional? It is, in fact, the rule rather than the exception. Many of us, who have acted as general duty medical officers for the past five or nearer six years, have long ago given up hope of doing anything either interesting or useful in the way of medical or surgical work, and we have achieved the ability to do nothing at all for hours on end. Others have written novels or plays, or collected butterflies or beetles, or learnt languages, or studied contract bridge, or simply taken to drink and dissipation on a scale limited only by the regulations imposed by the field cashier. I have accumulated a collection of about 3000 photographs, covering North Africa, Sicily, Greece, and the whole of Italy, having luckily acquired a quantity of captured enemy film and developing materials. But all these pursuits, even with the delights of travel, are a poor compensation for loss of professional knowledge and skill, financial embarrassments, and long separation from wife and family. If the CMWC cannot propose anything to equalise our condition with that of our indispensable colleagues the sooner we are rid of them the better.

The specialist, on the other hand, should not grumble. He is allowed to do the work which he likes doing, and is being paid at a higher rate for it. Particularly the surgeon is to be envied. We reflect that if we had not been in such a hurry to volunteer, we might have stepped into vacant hospital appointments for a number of months, and then joined the Services as specialists too. Why did we not play our cards better? Our colleagues who had the good sense to wait till they were conscripted have scored heavily by so doing. The fiasco of the "Protection of Practices Scheme" will not easily be forgotten either. Perhaps "Serving Medical Officer" will inform us exactly why we should be grateful to the CMWC? If their rehabilitation scheme of two weeks' refresher course turns out to be anything but another fiasco, we shall (in the words of George Robey) be more than surprised, we shall be amazed.

"ANOTHER SERVING MEDICAL OFFICER."

ACETABULAR APPROACH TO THE HIP-JOINT

SIR,—The following case may interest orthopædic surgeons.

I operated on a soldier recently who had been wounded by a Jap rifleman. A standard ·303 bullet had entered the left iliac fossa, perforating some coils of gut, and had finally lodged in the head of his right femur. A laparotomy had been performed and the bowel sutured, and from this operation he made an uneventful recovery. On returning to the UK six months later, he started to have pain and restricted movements in the right hip-joint, and finally an X-ray film was taken which revealed a bullet in the head of his femur which had not been discovered during his previous period in hospital.

All movements at the right hip-joint were limited and painful. The X-ray film showed that over half of the bullet was embedded centrally in the region of the fovea capitis, the remainder projecting into the acetabulum. There was a moderate amount of rarefaction of bone immediately adjacent to the foreign body, in both the acetabulum and the femur. The bullet obviously had to be removed. The problem was how this could be done with the least trauma. A formal exposure of the hip-joint and a dislocation of the femoral head from the acetabulum would have been a major procedure inflicting a considerable amount of trauma. It was decided therefore to approach the bullet through the roof of the acetabulum by an extraperitoneal exposure. This was carried out under spinal anæsthesia.

An incision was made 1½ in. above the inguinal ligament. The femoral vessels were retracted and the pectineus muscle divided in the line of its fibres. With the help of the radiologist, a hole was made with a half-inch trephine in the roof of the acetabulum. The bullet was removed with a little difficulty because it was firmly embedded in the head of the femur. The disc of bone was replaced in the roof of the acetabulum, and the wound was closed. Convalescence was similar to that following a trivial operation. Within a few weeks the patient had practically full painless movements of the hip-joint.

The point of interest that arose out of this operation was that through this relatively small hole the greater part of the articular surface of the head of the femur could be inspected by rotating the limb. This might be an excellent approach in carrying out an intra-articular arthrodesis of the hip-joint. The cartilage of the femur and acetabulum could be denuded without much difficulty, and a bone-graft could easily be inserted, with the lower limb in the optimum position. With modifications such an operation might be a more simple and effective method of arthrodesing the hip-joint than the two-stage pin operation or other procedures which involve opening the joint.

D. LANG STEVENSON.

Public Health

Food Poisoning at Stoke-on-Trent

ON July 6 the Public Health Department of Stoke-on-Trent learnt that two persons, Mr. and Mrs. A, had recently died from gastro-enteritis. It was found that Mrs. A had meat sandwiches from a shop in Longton on June 26 and was taken ill on the 27th. Mr. A had sandwiches from the same shop on June 27 and was taken ill on the 28th. Mrs. A died on June 29 and Mr. A died on July 5.

The shop in question is a small lock-up cook-shop supplying meat sandwiches, meat and potato pies, and cooked dinners off the premises. In addition a small mixed general grocery business was carried on. The property is very old, in poor state of repair. While the general superficial appearance was fairly clean, further investigation revealed an accumulation of old stock and neglected cupboards and shelves. The premises were also infested to some extent by mice, and the occupier had been in the habit of using 'Liverpool Virus' bait.

As a result of further investigations the following cases were revealed—

	Bought sandwiches June	*Taken ill June*	*Died July*
Miss B, aged 42 years	27	27	8
Mr. C, aged 42 years	27	27	1
Mr. D, aged 68 years	27	28	11
Mrs. E, aged 58 years	—	27	4

There was no definite evidence that Mrs. E had taken food from the shop, though she was a relative of the shopkeeper. It was found that 25 other people had purchased meat sandwiches or pies from this shop on dates between June 26 and 29 inclusive, and these people were taken ill between June 26 and July 2 and are now recovering. The outbreak has been confined to this particular shop. Various samples of foodstuffs were submitted to the County Bacteriologist for examination, the results all being negative except for a partly consumed sandwich found in the pocket of Mr. C.

The sale of cooked meats was stopped on July 7, and the whole business was voluntarily closed down by the owner on July 9. The whole of the foodstuffs on the premises have been examined, and a certain amount has been surrendered as unfit for food (mainly tinned goods in an unsaleable condition); other food likely to have been contaminated was removed by the Public Health Department, and the remaining stock—tinned, bottled, and cartoned goods, which were in a sound condition and not likely to be contaminated—has been taken over by a local wholesaler by arrangements with the Food Executive officer. The premises have been cleared of all food stocks.

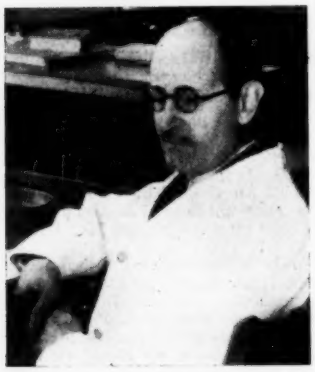
There were 6 deaths out of something over 30 cases—a high rate for food poisoning—and the cause of all the deaths was *Bacterium enteritidis* of Gaertner. Many of the cases which recovered showed a positive agglutination to Gaertner's bacillus. The investigations were carried out by Dr. A. J. McCall. The actual "virus" used in the shop was not available, and other bottles were therefore purchased for the investigations. Dr. Taylor of Oxford carried out further examinations of the "virus" and found the Gaertner's bacillus in the bottles sent to him were of the Danysz type, whereas that found to be the cause of the fatal cases was of the Jena type. In a previous case in Stoke the "virus" had been of the Jena type so perhaps the strain is still used.

Obituary

PÍO DEL RÍO HORTEGA

M D VALLADOLID, D SC OXFD (HON. CAUSA)

Don Pío del Río Hortega was born in the small Castilian village of Portillo, near Valladolid, and in the university of this city he studied medicine. His doctor's thesis on tumours of nerve tissue showed his early interest in neurology and after a short spell of general practice in a rural community he went to Madrid to work with Cajal and Achúcarro. To this period belong his description of the centrosome of the ganglion cells and the comparative study of epithelia, in which the outstanding results of the application of Achúcarro's method for impregnating connective tissue are beautifully shown in dozens of splendid drawings. Hortega's interest in the method led him to devise several improvements now generally adopted. The possibilities of silver impregnation in frozen sections so impressed him that he never ceased to improvise new histological methods.



His outstanding achievement in the field of neurological histology was the analysis of Cajal's "third element" into the oligodendroglia and microglia. We owe to Hortega our present conception of the microglial (or Hortega) cell as the mesodermal wandering cell of the nervous system. His other publications include a study of the pineal gland, which is probably the most complete morphological account of that enigmatic organ.

In 1920 Dr. Hortega was appointed director of the new histopathological laboratory of the Junta para Ampliación de Estudios where despite economic and material difficulties, he succeeded in gathering a small number of disciples and collaborators, Spaniards and visitors from abroad, whose training and advancement always took first priority among his interests. His appointment as director of the Cancer Institute in Madrid widened the scope of his activities. After some valuable contributions to our knowledge of epithelial tumours, he found in the study of meningiomas and the tumours of nerve-tissue, the field best suited to his gifts and inclinations, and at the International Cancer Congress in Madrid in 1933 he reported his results which later appeared in book form as *Anatomia Microscópica de los Tumores del Sistema Nervioso*.

Hortega first came to England many years ago to work at the laboratories of the Imperial Cancer Research Fund, but his visit was interrupted by the outbreak of war in 1914. During the Spanish Civil War he went to Paris to the laboratory of Professor Vincent who for years had provided most of the material for his work on brain tumours. Later, at the invitation of Professor Cairns, he migrated to Oxford where high honours and generous hospitality awaited him. He was appointed reader in neuropathology. Of his life there W. McM. writes:

Hortega at Oxford—we recall a small, quiet, but excitable man with quick, lively movements, deepset, penetrating, and bashful eyes, and a trim moustache. But Hortega was not so far removed from the world of men as his natural shyness and his difficulty of language would suggest. He grew to love the haunts of Shakespeare, the Cotswolds, and the charm of Bath. He would learn to be "very English" in time and with grim determination would request a tea of fish and chips. The conferment of an honorary degree at the Sheldonian theatre was to him a real joy, but who will forget that nervous lonely little man, his eyelids blinking faster even than their wont, swamped in scarlet robes, as he listened to the memorial of the Public Orator. He never really settled and was always the pathetic figure of the exile. "In England," he said, "I love you all but, oh God, not your draughts and your everlasting mutton." The former always froze him into moroseness and the melting-point of mutton fat, he argued, was too high for the intestinal cells to work in any degree of comfort. The rooks' nests in the elms reminded him of senile plaques, and so of his work and his homeland, and with humour and pride he would show snapshots of the castle in Spain which he really owned. His English was shocking though surprisingly adequate. "My section, good," he would say, "your section, not good." If you poured too much solution into your pocillo he would cry out "Not convenient!" and hastily decant away the excess.

A firm believer in the value of a lengthy siesta this master craftsman would return to the laboratory late in the afternoon and in an overheated atmosphere saturated with essential oils and pyridine, so that one feared for the integrity of his bone-marrow, would bend over his little dishes and with consummate skill and patience order the cells of the brain to deliver up to him their secrets. The microglia danced to him and revealed their graceful limbs. The astrocytes scintillated in their peculiar firmament of the ground substance. A faint exclamation of surprise would greet the appearance of a globoid and almost limbless gitterzelle. "Look," he would say, "this one eat so much arroz, he wants not to move." And under the microscope he found a world of beauty which pleased his artistic soul and fed his inquisitve mind, for at heart he was a physiologist. His opinion he would give readily but dogmatically, admitting of no alternative diagnosis, for in the laboratory he was an individualist and an autocrat.

In 1940 he went to Buenos Aires to the laboratory founded by the Institución Cultural Española and his homesickness found there some relief among Spanish-speaking people. In these last years, shadowed by the certainty of a near end, he continued working, founded and edited the *Archivos de Histología Normal y Patológica* in which, besides papers of young disciples, he published his lifelong labours on histological methods and initiated new investigations. Until his last moments he maintained his firm democratic convictions, rejecting the enticements of the Spanish government's representatives to return to Spain. He died on June 1.

Hortega's keen sense of duty and strong will were hidden by a shy and unassuming exterior. He was the typical man of science, but with a new element of artistic conception in his work which made possible his achievements in such a difficult and well-tilled field. Only his delight in perfection and his enjoyment of microscopical beauty can explain his sustained efforts in problems usually admitted as arid. If genius is the capacity for taking infinite pains, few deserve the qualification with better reason.

WILLIAM ALDREN TURNER

C B, M D EDIN, F R C P

On July 29 Dr. Aldren Turner, consulting physician and senior neurologist to King's College Hospital, London, and consulting physician to the National Hospital, Queen Square, died in Edinburgh where he was born in 1864. The eldest son of Sir William Turner, FRS, a former principal, vice-chancellor and professor of anatomy of the University of Edinburgh, he was educated at Fettes College. He graduated in medicine with first-class honours at Edinburgh in 1887, and after postgraduate study at Berlin and at St. Bartholomew's Hospital in London, his long association with King's began in 1892 when he was appointed assistant to David Ferrier in the neuropathological laboratory. In the same year he was awarded the gold medal for his MD thesis at Edinburgh. After holding a demonstratorship in neuropathology he became lecturer in his specialty at King's and in 1899 he was appointed to the staff of the hospital.

Nine years later he became physician in charge of neurological cases and lecturer in neurology at the medical school. For six years he was also on the staff of the West London Hospital and from 1900 to 1927 he was physician at the National Hospital, Queen Square. In 1907 he published his *Clinical Study of Epilepsy*, and three years later he chose this disease as the subject of his Morison lectures to the Royal College of Physicians of Edinburgh. His *Textbook of Nervous Diseases*, written jointly with Dr. Grainger Stewart, also appeared in 1907. Dr. Turner was elected president of the section of neurology and psychiatry of the Royal Society of Medicine in 1927 and the following year he retired from the staff of King's College Hospital.

During the last war with the rank of Colonel AMS he was selected for special duty with nervous and mental shock cases in France and he was also consulting neurologist to the Home Forces, and in 1918 in his Bradshaw lectures to the Royal College of Physicians of London, of which he had been elected a fellow in 1896, he described his experience of the neuroses and psychoses in war. For his services Turner had been appointed CB in 1917 and after 1918 he continued this side of his work as a member of the War Office Committee on Shellshock. Till 1940 he was also neurologist to the War Office Medical Board and from 1930 to 1943 consultant adviser to the Ministry of Pensions. For a time he sat on the Army Nursing Board.

Dr. Turner married in 1909 Helen, third daughter of Dr. J. A. MacDougall, and they had three sons. Dr. J. W. Aldren Turner is now serving with the RAMC as a neurological specialist, and Dr. A. C. Turner with the medical branch of the RAFVR.

On Active Service

CASUALTIES

WOUNDED

Captain J. M. HAMILTON, MC, RAMC.
Captain P. G. S. JOHNSON, MB LOND., RAMC.

AWARDS

MC

Lieutenant A. O. HARRIES, RAMC
Lieutenant GEORGE OLLERENSHAW, MBE, RAMC

MENTIONED IN DESPATCHES

Lieut.-Colonel G. M. DENNING, RAMC
The late Surgeon Lieutenant ALEXANDER GRAHAME MORAY WILSON, MB BIRM., RNVR.

The VC has been awarded to Corporal F. G. TOPHAM, medical orderly in the 1st Canadian parachute battalion.

MEMOIR

Colonel MALCOLM PATERSON, who was killed on May 26, was the son of the late Dr. Alexander Paterson and Mrs. Paterson of Aberdeen. He was educated at Kimbolton School and Aberdeen University, where he played both cricket and rugby and was a keen member of the OTC. After graduating in 1938 he was for a time assistant medical officer at St. Mary Abbots Hospital under the London County Council, till as a Territorial he was called up on the outbreak of war. He served with a field ambulance in England and in the Middle East and was appointed OBE for his part in the Italian campaign. From the Mediterranean he was posted to India and his work there as officer in command of No. 1 Forward Malaria Unit was described in a BBC war commentary. Later he was appointed assistant director of medical services for the 26th Indian division—at 29 he was probably the youngest ADMS in the Army. He was killed during our successful one-day assault on Rangoon when the tank landing craft in which he was struck a mine in the Rangoon river. Unfailingly kind, cheerful, and skilled, he was loved by all from his Indian orderly to the corps commander.

Notes and News

A STANDARD IN HOSPITAL FEEDING

A SHINING exception to a gloomy rule justifies a hope that the rule will presently be reversed. Among the depressing aspects of hospital feeding has been the scarcity of exceptions: most of our hospitals fail in some respects in their feeding of patients and staff, and many fail in every possible way. The London Hospital has always taken pains to succeed, even when war had reduced kitchens to rubble, and staff, speaking figuratively, to a skeleton. Yet skeletons, it seems, can take a keen interest in nutrition. Even working with improvised kitchens the hospital's catering staff have done well; with new kitchens and equipment they may be trusted to do better. A start has been made with new nurses' kitchens and dining-rooms, which were opened on Aug. 8. A large basement ward has been converted into a cheerful suite of rooms, the white-enamelled dining-room, with its small tables, opening on to the pantry by a wide service hatch, and the main kitchen, with its cold room and washing-up annexe (for kitchen utensils only), lying behind that. There is a separate pastry kitchen, with special ovens for cakes and pies and Vienna bread. Offices for the chef and the dietitian, the kitchen staff mess, the lay staff mess, the storerooms, and a bathroom for the kitchen staff complete the unit. Sir Wilson Jameson, in declaring the kitchens open, spoke of the food spoiled by bad cooking or serving, so commonly offered in hospitals, and of the appalling arrangements for night nurses, many of whom still get a dish left over from the day staff's meal to heat up in the ward kitchen in the small hours. At the London Hospital there is a day and night service, and 22 sets of meals are provided in each 24 hours. At the moment the nurses' kitchen caters for 300 nurses and 30 doctors, but the figure is growing towards a peacetime complement of twice those numbers. Before the war the hospital had 40 male cooks: today it has 4—the chef de cuisine, the head chef of the nurses' and doctors' kitchen, the head chef of the patients' kitchen, and the pastry chef. In the nurses' kitchen the head chef displayed his roomy gas ovens, his bain-marie, his bacon, bean, and bread slicers, potato peelers, and wheeled flour bins, with the satisfaction of the craftsman who finds all his tools to hand; the pastry chef had the sweet for the evening on view, a thousand elegant portions to set the eye telegraphing vain messages to the stomach. Menus are planned, between the steward (who does the buying), the chef de cuisine, and the sister dietitian, to ensure a balanced meal appropriate to the season and the variations of the market. No cooking is done in the wards, and food is transported in heated trolleys. This hospital shows what can be done about hospital food: others should hasten to compete. An early development should be the founding of a complete school of hospital catering at the London.

RESEARCH AT ST. DUNSTAN'S

A BLIND person walks about alone by using his sense of hearing for direction-finding and for locating his position by reflected sound. The council of St. Dunstan's has set up a committee to consider whether the knowledge gained during the war in devising instruments for direction-finding, radio-location, and "blind" flying can now be applied to help the blind in their daily life. The committee is to be known as the Sensory Devices for the Blind committee, and its members are: Prof. E. D. Adrian, OM, FRCP (chairman); Mr. Clifford Paterson, D SC, FRS, Mr. Thomas Smith, FRS, Flight-Lieutenant E. Barton, Mr. B. H. C. Matthews, D SC, FRS, Mr. H. L. Kirke, Sir Ian Fraser. The committee has had two preliminary meetings, and on their advice St. Dunstan's has decided to set up a research unit and to seek the full-time services of a research physicist and a biologist. Through the generosity of an anonymous benefactor, money has been made available for the work of the committee for five years. The committee will not only investigate guiding devices for the blind but also methods whereby the printed word in an ordinary book can read aloud to the blind; an improvement on recorded talking books, braille machines, and other apparatus. The research work will include the better use of the little glimmer of sight which remains with many people who are technically blind, and the substitution of the sense of sight by the other senses.

St. Dunstan's has undertaken some preliminary research into direction-finding machines, and Captain H. G. Round has made a guiding device which transmits a beam of light and receives the reflected ray. Preliminary tests have

justified further work, and a new and more portable model is being made, but Sir Ian Fraser stresses that this work is in its early stages and blind people must not expect any help from these devices in the near future.

University of Cambridge

On Aug. 3 the following degrees were conferred:

MD.—W. R. Billington, C. M. Fletcher, M. I. A. Hunter, R. A. Shooter, K. W. Donald (by proxy).

MB, B Chir.—N. K. Connolly, W. P. D. Ross, J. P. D. Mounsey, C. J. H. Paget, F. S. Sinker, R. H. Whitworth, C. G. Attenborough, R. E. B. Spencer, A. R. C. Butson, P. M. Jeavons, B. W. Pay, I. P. Williams, I. D. P. Wootton, A. R. Buckley, I. S. Hodgson-Jones, D. A. Pyke, M. G. Thorne, R. G. M. Longridge, William Waugh, A. M. H. Bennett, R. E. Church, J. M. Drew, J. W. B. Forshaw, J. B. Lawson, C. M. Monro, V. R. Pickles, David Wilkes, J. H. F. Wood, C. H. Kinder, A. J. Underwood-Whitney, J. M. Walshe, J. C. Sloper, James Crichton, A. G. Dingley, R. B. Wilson, J. A. Dew, P. F. Boreham, H. R. Mallows, J. R. Smythies, David Wilson, M. F. Bethell, R. A. Green, N. B. Malleson, J. R. Moffatt, K. M. Nuttall, O. L. Wade, S. P. Wrightson, J. F. Fisher, A. D. Beard, Emeric Halász (by proxy); N. T. Welford, I. M. P. Dawson, D. G. Abrahams, G. R. E. Naylor, K. E. E. Read, D. A. W. Edwards, D. W. S. Sheldon (in person).

University of London

Dr. John Yudkin has been appointed to the university chair of physiology at King's College of Household and Social Science in succession to Prof. V. H. Mottram.

Dr. Yudkin took his B Sc at the University of London in 1929 and his BA at the University of Cambridge two years later. In 1935 he obtained his Ph D Camb., and after graduating in medicine in 1938 he became clinical assistant to medical outpatients at the London Hospital. He is also a fellow of the Royal Institute of Chemistry. He has held the medical research scholarship of the Grocers' Company and the Benn W. Levy biochemical research studentship. In 1934 he was appointed supervisor in biochemistry and physiology at Christ's College and Emmanuel College, Cambridge.

While working at the Dunn Nutritional Laboratories, with a Halley Stewart research fellowship, he has published papers on the dehydrogenases of *Bacterium coli* and on the assessment of nutritional status. In 1943 Dr. Yudkin took his MD, and in the same year he joined the RAMC and is now serving in West Africa, where he has devised a method of estimating the concentration of mepacrine in the urine, and continues his investigations into nutritional deficiencies.

The title of reader in bacteriology in the University has been conferred on Dr. J. C. Cruickshank in respect of his post at the London School of Hygiene.

University of Liverpool

At recent examinations the following were successful:

MD.—I. Ansell, H. Dakin, Bentley Phillips, G. O. Thomas, P. H. Whitaker.

Ch M.—L. McK. Crooks.

Final Examination for MB, Ch B.—Beryl G. Anscombe, G. Ansell, K. W. Baruch, B. Dover, Monica Drinkel, J. W. L. Edwards, P. Foster, B. R. Frisby, S. Gillis, L. Griffiths, B. B. Harrison, D. C. R. Jones, J. T. W. Jones, P. R. B. Jones, R. V. Kinnish, M. Kirwan, Joyce R. Lewis, J. B. Roberts, Corris Venables, H. Wickham, J. R. E. Wilson.

University of Glasgow

Dr. L. J. Davis, senior lecturer in the department of medicine in the University of Edinburgh, has been appointed to the Muirhead chair of medicine in the University of Glasgow.

Dr. Davis graduated MB at the University of Edinburgh in 1924 after serving during the last war in the Naval Auxiliary Service as a surgeon lieutenant. He held the directorship of the government medical laboratory at Bulawayo and the chair of pathology in the University of Hong Kong before he returned to Edinburgh to take up his present appointment. He is also physician to the University teaching unit in the Edinburgh municipal hospitals. Dr. Davis took his MD with commendation in 1930 and was elected to the fellowship of the Royal College of Physicians of London this year. His published work includes papers on refractory and hæmolytic anæmias.

Return to Practice

The Central Medical War Committee announces that the following have resumed civilian practice:

Mr. J. C. AINSWORTH-DAVIES, FRCS, 48, Wimpole Street, W1.
Dr. ERNEST BULMER, FRCP, 3, Arthur Road, Edgbaston, Birmingham.
Dr. W. D. JEANS, 17, University Road, Leicester.
Dr. J. R. REES, FRCP, 116, Bickenhall Mansions, W1.
Dr. G. DE M. RUDOLF, Sea Walls, Clevedon, Somerset.
Mr. J. SHERNE, FRCS, 43, Park Square, Leeds, 1.
Mr. F. A. R. STAMMERS, FRCS, 89, Harborne Road, Edgbastbn, Birmingham 15.
Mr. R. SCOTT STEVENSON, FRCSE, 31, Harley Street, W1.
Dr. C. P. SYMONDS, FRCP, 87, Harley Street, W1.
Dr. SYDNEY TIBBLES, 2, Harley Street, W1.
Mr. W. E. TUCKER, FRCS, 21, Grosvenor Square, W1.
Mr. A. HEDLEY WHYTE, FRCS, Moorfield House, Upper Claremont, Newcastle-on-Tyne.

Provisional Council for Mental Health

During the autumn the council is holding five courses of ten weekly lectures on the psychology of frustration and fulfilment in adult life. The courses will take place at Sheffield on Mondays at 6.30 PM, beginning on Oct. 1; at Leeds on Tuesdays at 6.30 PM, beginning on Oct. 2; at Bradford on Wednesdays at 7 PM, beginning on Oct. 3; at Manchester on Thursdays at 6.30 PM, beginning on Oct. 4; at Liverpool on Fridays at 5.30 PM, beginning on Oct. 5. The lecturers will include Dr. Edward Glover, Dr. Lois Munro, Dr. R. G. Gordon, Dr. Noel Harris, Dr. Winifred Rushforth, Dr. J. A. Hadfield, and Dr. H. Crichton-Miller. Tickets may be had from the secretary of the public relations department of the council, 39, Queen Anne Street, London, W1.

Ten weekly lectures on human relationships in the modern world will also be held at Bristol on Fridays at 6.30 PM, beginning on Oct. 12. The lecturers will include Dr. W. S. Maclay, Dr. Joyce Partridge, Dr. Emanuel Miller, Dr. Frank Bodman, Dr. Tom Garland, Dr. Hadfield, and Lieut-Colonel R. F. Barbour. Tickets may be had from the regional representative of the council, 2, Elton House, Rodney Place, Bristol, 8.

Tavistock Clinic

The clinic is moving from its war-time premises at Westfield College on Aug. 27 to 2–4, Beaumont Street, London, W1 (formerly the Duchess Nursing Home). The clinic will be closed from Aug. 23 to Sept. 10. Its pre-war premises in Malet Place, WC1, were destroyed by enemy action in 1941, and the new building is to be its permanent post-war home.

INFECTIOUS DISEASE IN ENGLAND AND WALES

WEEK ENDED AUG. 4

Notifications.—The following cases of infectious disease were notified during the week: smallpox, 0; scarlet fever, 1232; whooping-cough, 1072; diphtheria, 360; paratyphoid, 3; typhoid, 7; measles (excluding rubella), 2190; pneumonia (primary or influenzal), 234; puerperal pyrexia, 145; cerebrospinal fever, 39; poliomyelitis, 21; polio-encephalitis, 3; encephalitis lethargica, 0; dysentery, 324; ophthalmia neonatorum, 74. No case of cholera was notified during the week. There was 1 case of typhus at Uckfield, Sussex.

The number of service and civilian sick in the Infectious Hospitals of the London County Council on Aug. 1 was 912. During the previous week the following cases were admitted: scarlet fever, 51; diphtheria 20; measles, 19; whooping-cough, 121.

Birmingham reported 7 deaths from diarrhœa and enteritis.

Deaths.—In 126 great towns there were no deaths from enteric fever, scarlet fever, or measles, 5 (2) from whooping-cough, 8 (0) from diphtheria, 53 (8) from diarrhœa and enteritis under two years, and 5 (0) from influenza. The figures in parentheses are those for London itself.

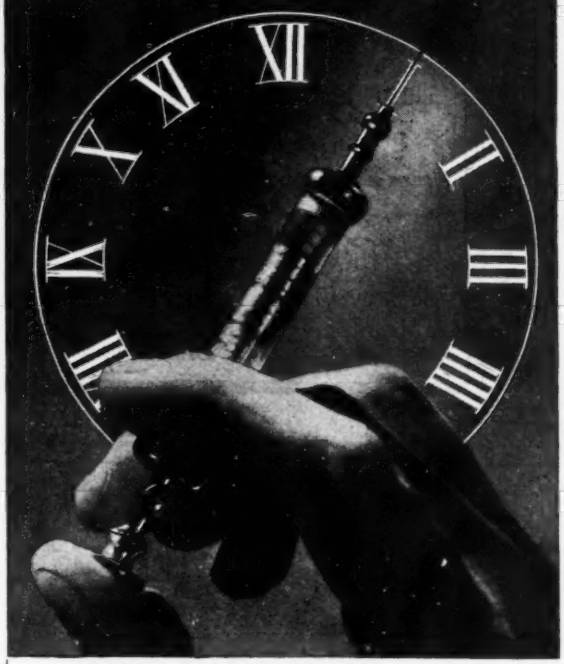
The number of stillbirths notified during the week was 200 (corresponding to a rate of 29 per thousand total births), including 11 in London.

Appointments

Colonial Service.—The following appointments are announced:

BROWN, J. S., MD EDIN., DTM and H, DMRE, specialist in radiology, Uganda.
COCHRANE, E., MD GLASG.: DMS, Aden.
COWAN, D. K., LRCPE, LDS: MO, Nigeria.
DUNCAN, L. A., MRCS: MO, St. Helena.
EVANS, H. S., MRCS: ADMS, Fiji.
FORREST, S., MB ABERD.: DDMS, Tanganyika.
HOLMES, G., MB DURH., MRCOG: specialist in midwifery and gynæcology, Uganda.
MCKENZIE, A., MB LOND., DTM and H: senior MO, Tanganyika.
MACLEAN, G., MB GLASG., DTM: DMS, Trinidad.
REID, J. R., MB: MO, Fiji.
ROBINSON, P. B., MB DUBL., DTM, DPH: DDMS, Uganda.
SLADEN, F. J., MRCS, DTM and H: Senior MO, Falkland Islands.
SNEATH, P. A. T., MD: DMS, Tanganyika.
STEENSON, K. R., MB: MO (grade I), Fiji.
TATE, JOYCE K., MB ABERD.: asst. MO, Jamaica.
WILLIAMSON, J., MB EDIN.: Senior MO, Tanganyika.
YOUNG, W. A., BM OXFD, DTM & H: senior specialist in venereal diseases, Tanganyika.

Time E-X-T-E-N-D-E-D



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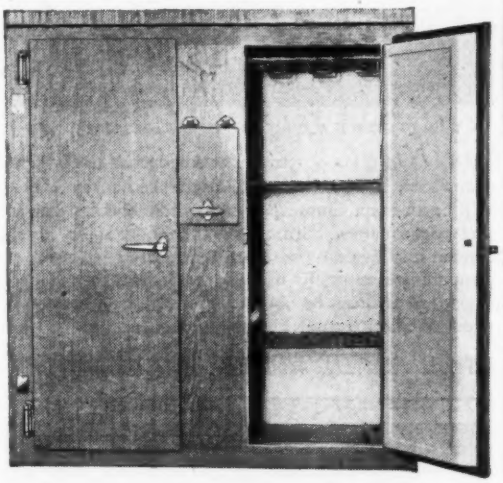

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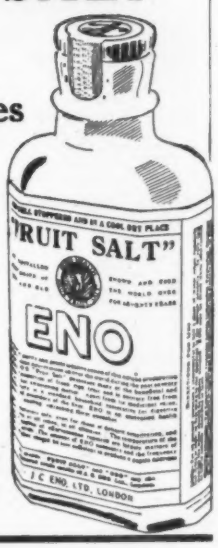

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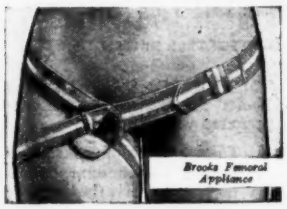

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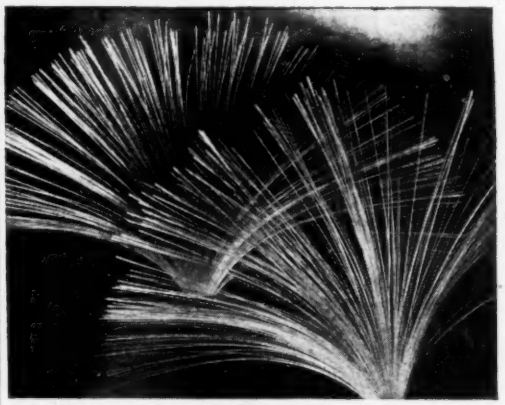

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Terms: 6 to 10 guineas per week, inclusive.

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FOR NERVOUS AND MENTAL DISORDERS

Cases of Alcoholism and Drug Addiction are admitted. Every facility for individual treatment on the most modern lines. As the Hospital is well endowed, terms are exceptionally moderate.

Medical Certificates given anywhere in the British Isles are valid for admission of patients.

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CHISWICK HOUSE,

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Telephone: PINNER 234.

A Private Hospital for the Treatment and Care of Mental and Nervous Illnesses in both Sexes.

A modern country house, 12 miles from Marble Arch, in attractive and secluded surroundings. Fees from 10 guineas per week inclusive. Cases under Certificate, Voluntary and Temporary Patients received for treatment.

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FOR NERVOUS AND MENTAL DISORDERS

NORTHAMPTON

PRESIDENT: THE MOST HON. THE MARQUESS OF EXETER, K.G., C.M.G., A.D.C.

MEDICAL SUPERINTENDENT: THOMAS TENNENT, M.D., F.R.C.P., D.P.H., D.P.M.

This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, bio-chemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods; insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Piombières treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-Ray Room, an Ultra-violet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for bio-chemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

MOULTON PARK

Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL

The seaside house of St. Andrew's Hospital is beautifully situated in a Park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: No. 2356 and 2357 Northampton), who can be seen in London by appointment.

PECKHAM HOUSE, 112, Peckham Road, London, S.E.15

Telegrams: "Alleviated, London" **Telephone: Rodney 2641-2642**

A Private Mental Hospital, for Ladies and Gentlemen suffering from Nervous and Mental Illness, where the amenities of a comfortable home are combined with full investigation and every well-established modern treatment.

Terms from £4.4.0 weekly.

Illustrated Prospectus may be obtained from the Physician Superintendent.

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A Registered Hospital for MENTAL DISEASES, and its Seaside Branch, GLAN-Y-DON, Colwyn Bay, N. Wales

THE object of this Hospital is to provide the most efficient means for the treatment and care of those of the Upper and Middle Classes suffering from MENTAL and NERVOUS DISEASES. The Hospital is governed by a Committee appointed by the Trustees of the Manchester Royal Infirmary. VOLUNTARY, TEMPORARY, AND CERTIFIED PATIENTS RECEIVED

For Terms and further information apply to the MEDICAL SUPERINTENDENT *Telephone*: GATLEY 2231

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A Private Hospital for the Care and Treatment of those of both sexes suffering from MENTAL DISORDERS

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standing in 12 acres of ornamental grounds, with separate villas, tennis courts, etc. Patients or Boarders may visit the Home by arrangement.

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PRIVATE MENTAL HOME for Nervous and Mental illness. All forms of treatment available. Fees from 4 gns. per week upwards according to requirements. Vacancies occasionally exist at reduced fees on the recommendation of the patient's own physician.

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A Private Home for the Care and Treatment of a limited number of LADIES with Mental and Nervous Disorders. Certified, Voluntary, and Temporary Patients received. Mansion with 12 acres of ground. (See *Medical Directory*, p. 2517.) Apply Resident Physician. Telephone: Little Chalfont 2046. Station: Chalfont and Latimer.

VALE OF CLWYD SANATORIUM

This Sanatorium is established for the treatment of Tuberculosis of the Lungs and the Pleural Cavities. It is situated in the midst of a large area of park-land at a height of 450 feet above sea-level. Average rainfall 29·57 per annum. Full day and night Nursing Staffs. X-ray plant. Every facility for Artificial Pneumothorax and for operations on the Chest. Electric Lighting. Central Heating.

For particulars apply to Medical Superintendent.

H. MORRISTON DAVIES, M.D., M.Ch. (Cantab.), F.R.C.S., Llanbedr Hall, Ruthin, N. Wales.

NORTHUMBERLAND HOUSE

Green Lanes, Finsbury Park, N.4

A PRIVATE HOSPITAL for the treatment of mental and nervous illnesses. Conveniently situated and easy of access from all parts. Six acres of ground, facing Finsbury Park. Voluntary and Temporary Patients received without certification. E.C.T. Shock therapy, Psychotherapy, and other modern forms of treatment. Telephone: STAmford Hill 2688. Telegrams: "Subsidiary, London."

For further particulars apply to the Medical Superintendent, ROBERT M. RIGGALL, Member British Psycho-Analytical Society.

ECCLESFIELD, STAPLEHURST, KENT

Home for the care and cure of Alcoholic cases (ladies). Fine mansion. 100 acres. Successful treatment. Catholic chapel on estate.

For terms apply to Sister Superior (Staplehurst 26111)

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For Mental Cases with or without Certificates.

Fees from Five Guineas per week (including Separate Bedrooms for all suitable cases without extra charge).

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Open Air Occupation and Recreation for Patients, Farming, Gardening, Football, Cricket, Tennis, Bowls, etc. School recognised by Ministry of Education.

FEES—1st Class (men only) .. .. .. from £3 per week
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For further particulars apply to—
C. EDGAR GRISEWOOD, A.C.A., 20, Exchange Street East, LIVERPOOL, 2.

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For LADIES and GENTLEMEN of Unsound Mind

Terms moderate. Apply to Resident Medical Superintendent. Telegrams: ADAM WEST MALLING. Telephone No. 2: MALLING.

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Information and advice obtainable from THE FELLOWSHIP OF POSTGRADUATE MEDICINE, 1, Wimpole-street, London, W.1. LANgham 4266.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE

FOR WOMEN.

8, Hunter-street, London, W.C.1

NOTICE.

A. M. BIRD POSTGRADUATE SCHOLARSHIP IN PATHOLOGY

Applications are invited for the above Scholarship, which is available from 12th September, 1945, tenable for 1 year. The Scholarship is of the value of £200, with board-residence provided in addition, and is open to *former students of the School only*, to enable them to spend full time in the Pathology Unit for general work in all branches of pathology.

Applicants should have held at least one house post, preferably medical. They must be prepared to work in the Pathology Unit at the Three Counties Emergency Hospital, Arlesey.

Applications should be addressed to the undersigned at the School before 30th August, 1945.

August, 1945. NANCIE MOLLER, Warden and Secretary.

L. M. S. S. A.

FINAL EXAMINATION: SURGERY, 8th October, 12th November, 10th December, 1945. MEDICINE, PATHOLOGY, 15th October, 19th November, 17th December, 1945. MIDWIFERY, 16th October, 20th November, 18th December, 1945. MASTERY OF MIDWIFERY EXAMINATIONS, May and November.

For regulations apply REGISTRAR, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

THE UNIVERSITY OF LIVERPOOL

GEORGE HOLT CHAIR OF PATHOLOGY

The Council of the University invites applications for the George Holt Chair of Pathology at a salary of £1500 p.a., together with superannuation within the Federated Superannuation System for Universities. The appointment will date from 1st January, 1946, or as soon thereafter as may be practicable; leave of absence may be granted to a Professor-elect who is engaged upon National Service.

Further particulars may be obtained from the undersigned, by whom applications (12 copies) should be received not later than 31st October, 1945. Candidates who are overseas may make application by cablegram, naming 3 referees.

August, 1945. STANLEY DUMBELL, Registrar.

THE QUEEN'S UNIVERSITY OF BELFAST.

PARLIAMENTARY REGISTER.

Notice is hereby given that the Register of Parliamentary Electors of the Queen's University of Belfast is now being revised, and existing electors who have changed their address or state since the last revision are requested to notify such change before 31st August, 1945, if they have not already done so.

Graduates of the University who are not registered and who desire to become Parliamentary Electors should make claims for registration to the undersigned, from whom forms of claim may be obtained. RICHARD H. HUNTER, Secretary.

EXAMINING SURGEONS: Factories Act, 1937. The following appointments as Examining Surgeon under the Factories Act, 1937, are vacant. Applications should be sent to the Chief Inspector of Factories, 8, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of application*
TRING ..	HERTFORD ..	3RD SEPTEMBER, 1945
HORSFORTH ..	THE WEST RIDING OF YORK	3RD SEPTEMBER, 1945
WIVELISCOMBE	SOMERSET ..	3RD SEPTEMBER, 1945

BRITISH MEDICAL ASSOCIATION. The Council of the British Medical Association invites applications from registered medical practitioners, including those serving with H.M. Forces, for the post of SCOTTISH SECRETARY. The salary will be at the rate of £1250 a year, rising by annual increments of £50 to £1750 a year, plus cost-of-living bonus. The Association's superannuation scheme for officials will apply to the post. The successful candidate, who will be expected to take up office on 1st January, 1946, or on demobilisation, will spend 3 months at the Association's London Headquarters and 3 months at the Scottish Office in Edinburgh under the present Scottish Secretary before taking up the full duties of the office in Edinburgh.

There is no form of application and applications, with full particulars of qualifications, experience, age, &c., with the names and addresses of three persons to whom reference may be made, should be sent to the Secretary of the British Medical Association, Tavistock-square, London, W.C.1, arriving not later than 1st November, 1945. CHARLES HILL, Secretary.

UNIVERSITY OF LONDON. The Senate invite applications for the University CHAIR OF ANATOMY tenable at St. Bartholomew's Hospital Medical College (salary not less than £1150).

Applications must be received not later than 31st October, 1945, by the Academic Registrar, University of London, Richmond College, Richmond, Surrey, from whom further particulars should be obtained.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (Urgent.) The Managing Committee invite applications from qualified medical Women for the Staff appointment of part-time RADIOLOGIST in charge of the diagnostic work. Honorarium £200 p.a.

Applications, with full particulars and copies of 3 recent testimonials, should be sent to the Secretary by 31st August. Out of consideration for medical officers now in the Services this appointment will not be made on a permanent basis at present.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. At Oster House E.M.S. Hospital, St. Albans. Applications are invited from registered medical practitioners for the appointment of full-time SURGICAL REGISTRAR (B1). Candidates should have had some operative experience, and the Fellowship would be an advantage. Appointment under the E.M.S. Salary £350–£550, according to experience and qualifications, and billeting allowance. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply. Duties to commence 1st September or as soon after as possible.

Applications should be sent to the Medical Officer-in-Charge, Oster House E.M.S. Hospital, by 23rd August.

THE SOUTH LONDON HOSPITAL FOR WOMEN, Clapham Common, S.W.4. Applications are invited from registered medical Female practitioners for the undermentioned appointments, vacant 1st October, 1945 :—

HOUSE PHYSICIAN (A). Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

GYNÆCOLOGICAL HOUSE SURGEON (B2). This appointment is recognised for M.R.C.O.G. Practitioners who now hold A posts may apply.

Both appointments are for a period of 6 months with salary at the rate of £100 p.a., plus full residential emoluments.

Applications, stating age, nationality, qualifications with dates, and accompanied by copies of 3 recent testimonials, should be sent to the Secretary at the Hospital by Saturday, 15th September, 1945.

THE SOUTH LONDON HOSPITAL FOR WOMEN, Clapham Common, S.W.4. Applications are invited from registered medical Female practitioners for the appointment of RESIDENT MEDICAL OFFICER (B1) with care of the Obstetric Department. Some gynæcological beds, out-patients' clinics, and administrative work, from 1st October, 1945. Applicants should have held house appointments. Minimum salary at the rate of £150 a year, with full residential emoluments. Suitably qualified practitioners holding B2 posts may apply.

Applications, stating age, nationality, qualifications with dates, and accompanied by copies of 3 recent testimonials, should be sent to the Secretary by Saturday, 15th September.

THE ROYAL MASONIC HOSPITAL, Ravenscourt Park, London, W.6. The Board of Management of the Royal Masonic Hospital give notice that there will be several vacancies on the Medical and Surgical Staff, caused by retirements by reason of age of some members of the present Staff. The new appointments will be made at the end of 1945, and applications are invited from Fellows of the Royal College of Physicians of London or Fellows of the Royal College of Surgeons of England, as the case may be. The candidates must be engaged in consulting practice, be well established in their profession, and be members of the staff of a recognised London teaching hospital or special hospital.

Applications are required to be received, at the latest, by the end of October, 1945, and this slightly extended date should be noted. They should be made informally, without detailed copies of either testimonials or applications. They may be sent in the form of a cablegram, should the candidate be at present serving overseas. If a successful candidate was serving actively in one of His Majesty's Forces, or was a prisoner of war, the Board of Management would be willing to arrange for him to take up his appointment at the Royal Masonic Hospital when he was released from the Services.

The vacancies to be filled are as follows :—

A PHYSICIAN.	A GENITO-URINARY SURGEON.
A GENERAL SURGEON.	
A GYNÆCOLOGICAL SURGEON.	An ORTHOPÆDIC SURGEON.
	A PHYSIOTHERAPIST.

There will also be a vacancy for an ANÆSTHETIST. Candidates for this post must be devoting themselves entirely to the practice of anæsthesia.

The retiring age for all these posts is 60.

The number of beds in the Hospital is 200–220, of which 150 Beds during the war were given over to Service cases.

Applications should be made to the Joint Honorary Secretaries at the Hospital.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Goldhawk-road, Hammersmith, London, W.6. Applications are invited from registered medical practitioners for the following appointments :—

ASSISTANT RESIDENT MEDICAL OFFICER (B1) for 3 months, vacant 1st October, 1945. Applicants should have held house appointments and had obstetric experience. Preference will be given to candidates holding the diploma of F.R.C.S. Salary is at the rate of £80 p.a., with full residential emoluments. On completion of the 3 months, the selected applicant will be expected to apply for the post of Senior Resident Medical Officer (B1), also for 3 months. Salary at the rate of £100 p.a. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

DISTRICT RESIDENT MEDICAL OFFICER (B2) for 6 months, vacant 1st October, 1945. Salary at the rate of £90 p.a., with full residential emoluments. R practitioners holding A posts may also apply.

Applications, stating age, qualifications with dates, nationality, previous experience, and accompanied by 1 copy of 3 testimonials, should be sent to the Secretary by 2nd September.

H. B. STOKES, Secretary-Superintendent.

THE NELSON HOSPITAL, Merton, S.W.20. Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON (B2), now vacant, to act as Casualty Officer and Anæsthetist. Salary at the rate of £250 p.a., with full residential emoluments. R practitioners holding A posts may apply, when the appointment will be limited to 6 months ; otherwise may be extended.

Apply to the Secretary.

MILLER GENERAL HOSPITAL, Greenwich High-road, S.E.10. Applications are invited from registered medical practitioners, Male, for the following appointments :—

HOUSE PHYSICIAN (B2), vacant 8th September, 1945. Salary is at the rate of £120 p.a., with full residential emoluments. R practitioners who now hold A posts may apply, when the appointment will be limited to 6 months.

HOUSE SURGEON (A), duties to commence on 11th September, 1945. Salary is at the rate of £120 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, giving full particulars, together with copies of 3 recent testimonials, to be sent to the Secretary not later than 23rd August, 1945.

3rd August, 1945.

THE WILLESDEN GENERAL HOSPITAL, Harlesden-road, N.W.10. Applications are invited for the following posts :—

TEMPORARY HONORARY PHYSICIAN. War-time appointment only. Candidates must be M.D. and F.R.C.P. or M.R.C.P. (London), and not engaged in general practice.

MEDICAL REGISTRAR. Part time for 6 sessions per week. Candidates must be M.D. or M.R.C.P. (London) or preparing for such higher qualification, and not engaged in general practice. Salary £350 p.a., non-resident.

SENIOR CASUALTY OFFICER AND FIRST ASSISTANT to the Fracture Clinic. F.R.C.S. (England) preferred. This post is suitable for candidates intending to specialise in fractures or industrial medicine. Whole-time post. Salary £550 p.a., resident.

Applications, stating full particulars and giving names of 3 referees, to be forwarded to the undersigned, from whom copies of the regulations can be obtained. To provide opportunity for those serving in H.M. Forces to apply, applications will be received up to 30th November, 1945.

J. N. DRAKE, Secretary.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. Vacancies for HOUSE PHYSICIAN (B2) and 2 HOUSE SURGEONS (B2) will occur on 8th October, 1945. Salary £100 p.a., with full residential emoluments. One House Surgeonship is tenable at the Children's Unit at the Sector Hospital, Hemel Hempstead, and the others at the above address. The appointments are for 6 months. R practitioners now holding A posts, and practitioners of either sex ineligible for military service or rejected by the R.A.M.C., may apply.

Further particulars and form of application, which must be returned not later than the 20th September, 1945, are obtainable from: H. F. RUTHERFORD, Secretary.

August, 1945.

COUNTY BOROUGH OF WEST HAM. Whipps Cross Hospital. Applications are invited from registered medical practitioners (Male or Female) for the post of TEMPORARY RESIDENT ASSISTANT MEDICAL OFFICER (B1) at Whipps Cross Hospital, Leytonstone, E.11. Salary for the post is £350 p.a., rising by annual increments of £25 to a maximum of £450 p.a., plus a temporary war bonus, with apartments, board, and laundry, valued for superannuation purposes at £100 p.a. The salary is inclusive, and all fees received from whatever source must be paid to the Council. Candidates must be fully qualified registered medical practitioners, and should have held a previous resident hospital appointment. Preference will be given to candidates with practical experience of surgical operations, and the person appointed must give his or her whole time to the service of the Council, and will be required, should the occasion arise, to act in any of the Council's other institutions. The appointment will be subject to the Council's regulations as made from time to time regarding holidays, sick pay, &c., and the successful candidate will be required to pass a medical examination. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

Forms upon which application must be made can be obtained from Dr. E. Ashworth Underwood, Medical Officer of Health, 223/225, Romford-road, West Ham, E.7, on receipt of a stamped addressed envelope, and returned to him not later than 3rd September, 1945.

Canvassing members of the Council is prohibited and will disqualify. CHARLES E. CRANFIELD, Town Clerk.

Town Hall, West Ham, E.15.

MIDDLESEX COUNTY COUNCIL. Surgeon required at Ashford County Hospital, Middlesex (late Staines County Hospital). Applicants must be registered medical practitioners with higher degree or diploma in Surgery, who have devoted their time wholly or chiefly to practice of surgery. Commencing salary between £650 and £950 p.a., according to experience, plus war bonus (now £60 p.a.). Non-resident, but surgeon appointed must live near Hospital. Whole-time, unestablished appointment, subject to medical examination and 3 months' notice. Salary is inclusive ; any fees received must be paid to County Council. Surgeon appointed will take share in general surgery of hospital ; his duties, such as Council may require, will be under general supervision of Medical Director, and may include teaching. Post vacant early September.

Application, stating age, nationality, qualifications, and experience, enclosing copies of up to 3 recent testimonials, to the undersigned. Application forms not provided. Closing date 25th August, 1945.

C. W. RADCLIFFE ("B3"), Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

MIDDLESEX COUNTY COUNCIL. Junior Assistant Medical OFFICER (Anæsthetist, B2, resident) required at Chase Farm Hospital, Enfield, Middlesex. Applications invited from registered medical practitioners (including R practitioners now holding A posts). Salary £350 p.a. Board, lodging, and laundry. War bonus (now £60 p.a., proportion only in cash). Whole-time duties, such as Council may direct, under supervision of Medical Director. Appointment, subject to medical examination and 1 month's notice, is for 6 months, with possibility of extension to 12 months (except R practitioners). Post now vacant.

Applications, stating age, nationality, qualifications, and experience, enclosing copies of up to 3 recent testimonials, to Medical Director, "B3," of Hospital. Application forms not provided. Closing date 1st September, 1945.

C. W. RADCLIFFE, Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

ST. JOHN'S HOSPITAL, Lewisham, S.E.13. There is an immediate vacancy for a TEMPORARY HONORARY GYNÆCOLOGIST, for which applications are invited from candidates holding the English F.R.C.S. The successful applicant will have charge of beds, and take one out-patient clinic weekly.

Further particulars may be obtained from the undersigned, to whom applications should be sent as soon as possible.

J. C. GILBERT, Secretary-Superintendent.

HIS MAJESTY'S COLONIAL SERVICE

THE COLONIAL MEDICAL SERVICE

VACANCIES FOR MEDICAL OFFICERS

The maintenance of an efficient Colonial Medical Service constitutes a vital part of the national war effort and it is most important that the Service should be assured of an adequate supply of doctors.

The Secretary of State for the Colonies therefore invites applications from doctors possessing a medical qualification registrable in the United Kingdom who are British subjects and who are under thirty-five years of age.

Medical Officers are appointed in the first instance for general service. But there are ample opportunities for work in special branches of medicine and surgery, in public health and in medical research.

The normal salary scale is from £600 to between £1,000 and £1,120. There are large numbers of super-scale posts to which promotion is made on merit and which carry higher salaries.

Government quarters, in many cases free of rent, and first-class passages to and from the Colonies are provided, and an adequate pension scheme is in force.

Selected candidates are normally required to attend a course of instruction in Tropical Medicine and Hygiene either before proceeding overseas or during their first period of leave.

Further particulars, including the regulations governing admission to the Colonial Medical Service, may be obtained from the Director of Recruitment (Colonial Service), 2, Park-street, London, W.1.

KING GEORGE HOSPITAL, Ilford. Applications are invited for the appointment of an HONORARY PHYSICIAN in charge of the Department of Physical Medicine. Applications from Service candidates are invited.

Applications, with copies of testimonials, should reach the undersigned not later than 8th December, 1945.

G. AUSTIN HEPWORTH, Secretary and Superintendent.

ISOLATION HOSPITAL, Clatterbridge, Wirral. Applications are invited from register d medical practitioners for the appointment of RESIDENT MEDICAL OFFICER (B1), vacant shortly. The Hospital is a training school, and applicants must be prepared to lecture to nurses. The Hospital is within easy distance of the Liverpool Medical School, and time will be allowed, as the work of the Hospital permits, for attendance at higher qualification classes. Salary £265 p.a. (including war bonus), with full residential emoluments. The appointment is for 1 year only, and is not renewable. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

Applications, with copy testimonials, should be sent not later than 25th August, 1945, to the Clerk to the Wirral Joint Hospital Board, Isolation Hospital, Clatterbridge, Wirral.

GLASGOW ROYAL INFIRMARY. The Managers invite applications from registered medical practitioners for the post of RESIDENT ASSISTANT MEDICAL SUPERINTENDENT (B1). Salary £450 p.a. Particulars as to duties, &c., may be obtained from the Superintendent, Glasgow Royal Infirmary, 84, Castle-street, Glasgow, C.4. Registered practitioners holding A or B2 posts and rejected by the R.A.M.C. and who have obtained the sanction of the Scottish Central Medical War Committee may also apply.

Candidates are informed that no canvassing is allowed and they are requested to lodge applications with the undersigned, stating age, qualifications with dates, nationality, and 3 names for reference. R. MORRISON SMITH, C.A., F.H.A.,

Glasgow Royal Infirmary. Secretary and Cashier.

Office: 135, Buchanan-street, Glasgow, C.1.

THE CHESTER ROYAL INFIRMARY. (Normal Capacity 225 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), vacant early in September. Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be sent to the Secretary not later than 1st September, 1945.

CITY OF PLYMOUTH EDUCATION COMMITTEE. Temporary ASSISTANT SCHOOL MEDICAL OFFICER. With the consent of the Ministry of Health, applications are invited from registered medical practitioners, Male or Female, for the above whole-time appointment. Medical officers at present employed on public health by a local authority are not eligible. The salary will be at the rate of £500 p.a., rising by annual increments of £25 to £700 p.a., plus war bonus. Previous experience in a similar capacity with a local authority will be taken into consideration in fixing the commencing salary within this scale.

Applications should be forwarded as soon as possible to the Medical Officer of Health, "Seventrees," Lipson-road, Plymouth.

ANDREW SCOTLAND, Director of Education.

Education Offices, Cobourg-street, Plymouth.

HERTS COUNTY COUNCIL. Wellhouse Hospital, Barnet. (600 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment immediately of 2 HOUSE PHYSICIANS (A). Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications to Medical Superintendent.

LLANDUDNO AND DISTRICT HOSPITAL, Llandudno. (70 Beds.) Applications are invited from registered medical practitioners (Male or Female) for the appointment of HOUSE SURGEON (A), vacant 14th August. Salary £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications should be addressed to the Secretary.

KINGSTON UPON HULL CORPORATION HEALTH DEPARTMENT. ANLABY ROAD HOSPITAL. (581 Beds.) Applications are invited for the appointment of TEMPORARY ASSISTANT MEDICAL OFFICER (B1) from registered medical practitioners of either sex. Salary £350 p.a., rising by annual increments of £25 to £450 p.a., plus war bonus, together with an allowance at the rate of £150 p.a. in lieu of board, residence, and laundry outside the Hospital. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

Forms of application, &c., may be obtained from, and should be returned duly completed to, the Medical Officer of Health, Guildhall, Kingston upon Hull, at the earliest possible moment.

ROYAL BERKSHIRE HOSPITAL, Reading. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE PHYSICIAN (A), vacant 23rd October, 1945. Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when the appointment will be for a period of 6 months.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of 3 recent testimonials, should be sent immediately to—

H. E. RYAN, Secretary and House Governor.

ROYAL SHEFFIELD INFIRMARY AND HOSPITAL. Applications are invited from registered medical practitioners, including Medical Officers recently demobilised from H.M. Forces, for the appointment of ASSISTANT PATHOLOGIST (B1) at the Royal Infirmary, now vacant. Salary is at the rate of £450 p.a., non-resident. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

Applications should be forwarded forthwith to—

P. N. GLASS, General Superintendent.

Royal Infirmary, Sheffield, 6, 4th August, 1945.

SCUNTHORPE AND DISTRICT WAR MEMORIAL HOSPITAL, SCUNTHORPE, LINCS. (234 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1), now vacant. Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding diploma of F.R.C.S. Salary is at the rate of £400 p.a., with full emoluments. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply. S. LORD, Secretary-Superintendent.

BRISTOL ROYAL INFIRMARY. (Branch of the Bristol Royal HOSPITAL.) Applications are invited for the post of SENIOR RESIDENT MEDICAL OFFICER (B1). Salary £400 p.a., with full residential emoluments. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

Applications to be made on forms to be obtained from—

ELLIS C. SMITH, F.C.I.S., Secretary and House Governor.

LIVERPOOL HOMŒOPATHIC AND GENERAL HOSPITAL, Hope-street. Applications are invited for the post of HONORARY ASSISTANT PHYSICIAN to the above Hospital. Candidates must be members of the Faculty of Homœopathy or become so during 1 year after appointment.

Apply, stating age, nationality, experience, &c., to the Registrar on or before 30th September, 1945.

CITY OF CHESTER. City Hospital. Applications are invited from registered medical practitioners for the appointment of RESIDENT MEDICAL OFFICER (B2) at the above Hospital. Salary at the rate of £200 p.a., with full residential emoluments and temporary war bonus. R practitioners holding A posts may also apply, when appointment will be limited to 6 months; otherwise 1 year.

Applications for this appointment should be sent immediately to the Medical Officer of Health, Town Hall, Chester.

SALISBURY GENERAL INFIRMARY, Salisbury. Applications are invited for the post of SUPERINTENDENT AND SECRETARY of this Infirmary of 302 Beds. Candidates must have experience in hospital administration and accountancy. Salary £700 to £800 p.a., according to experience. Federated Superannuation Scheme in force. Applications from members of H.M. Services will receive every consideration.

Apply, stating qualifications and full details of experience, together with copies of 3 recent testimonials, to the Chairman, Salisbury Infirmary.

CORPORATION OF GLASGOW. Applications are invited for the post of MEDICAL OFFICER OF HEALTH for the City of Glasgow from qualified medical practitioners who are registered in the Medical Register as holders of a Diploma in Sanitary Science, Public Health, or State Medicine. The Medical Officer of Health is also Port Medical Officer for the Port of Glasgow. The duties comprise the administration of all the statutory health and sanitary services of the Corporation. The post is due to fall vacant at the end of March, 1946, and the new Medical Officer of Health will be expected to take up duty at the beginning of April, 1946, or as soon thereafter as possible. Salary at the rate of £1500 p.a., rising by annual increments of £50 to £2000 p.a., plus war increase, and with £50 p.a. additional for Port duties. The appointment is subject to the provisions of the Corporation's Superannuation Scheme and the successful candidate will be required to pass a medical examination.

In order to allow time for candidates now abroad or in H.M. Forces to apply, the last date for receipt of applications has been fixed at 1st October, 1945. Applications should be accompanied by copies of not more than 3 testimonials or the names of referees. WILLIAM KERR, Town Clerk.

City Chambers, Glasgow, 2nd August, 1945.

ADDENBROOKE'S HOSPITAL, Cambridge. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE PHYSICIAN (A), vacant 1st October, 1945. Salary is at the rate of £130 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months only, the normal period of appointment.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be sent not later than Wednesday, 29th August, 1945, to: J. A. BEARDSALL, Secretary-Superintendent.

CITY OF BIRMINGHAM. Yardley Green Road Sanatorium. (335 Beds.) Applications are invited from registered Male medical practitioners for the appointment of TEMPORARY ASSISTANT RESIDENT MEDICAL OFFICER (B1). In addition to his duties at the Sanatorium, the successful candidate will be required to undertake duties at the Anti-Tuberculosis Centre. Candidates should have held a resident hospital appointment and an appointment in some institution recognised for the treatment of tuberculosis. The commencing salary will be at the rate of £450 p.a., rising by £25 to £600 p.a., plus emoluments. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, qualifications with dates, experience, and nationality, together with copies of 3 recent testimonials, should be addressed to the Chief Clinical Tuberculosis Officer, 151, Great Charles-street, Birmingham, 3, not later than 31st August, 1945.

BOROUGH GENERAL HOSPITAL, Shirley Warren, SOUTHAMPTON. Applications are invited from medical practitioners (Male or Female) for appointment as LOCUM TENENS JUNIOR RESIDENT MEDICAL OFFICER (A). The fees payable will be £8 8s. per week, plus board-residence. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, giving full particulars, should be addressed immediately to—

H. C. MAURICE WILLIAMS, Medical Officer of Health.

Civic Centre, Southampton, July, 1945.

PETERBOROUGH AND DISTRICT MEMORIAL HOSPITAL. (Normal 154 Beds, E.M.S. 75 Beds; Total 229 Beds.) Applications are invited from registered medical practitioners (Male or Female) for the appointment of HOUSE SURGEON (A), now vacant. Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications to the Secretary and House Governor.

THE CHILDREN'S HOSPITAL, Sheffield (Inc.). (157 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), now vacant. Salary at the rate of £100 p.a., including full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, stating age, nationality, qualifications, and accompanied by copies of 3 recent testimonials, should be sent to the undersigned. The successful applicant must be a member of a Medical Defence Society.

T. H. G. GARTLAND, Superintendent and Secretary.

ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY, WIGAN. Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON (B2), Male, vacant 1st October, 1945. Salary £175 p.a., with full residential emoluments. R practitioners who now hold A posts may apply, when appointment will be limited to 6 months; otherwise may be extended for a further period.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be sent as soon as possible to—

A. STANLEY BRUNT, General Superintendent and Secretary.

UNIVERSITY OF ABERDEEN. Lectureship in Midwifery and GYNÆCOLOGY. Applications are invited for the post of full-time LECTURER IN MIDWIFERY in the University of Aberdeen, with duties in the Aberdeen Royal Infirmary, the Aberdeen Maternity Hospital, and the Antenatal Annexe. The salary will be £650. Preference will be given to men on Service. Persons desirous of being considered for the office are requested to lodge their names with the Secretary to the University by 30th September, 1945.

The conditions of appointment may be obtained from—

The University, Aberdeen. R. J. BUTCHART, Secretary.

CITY OF MANCHESTER. Withington Hospital. (1150 Beds.) Applications are invited from registered medical practitioners, Male or Female, for the appointment of TEMPORARY RESIDENT SURGICAL OFFICER (B1), vacant towards the end of 1945, at the above-mentioned Hospital, when the present officer is expected to be recruited into H.M. Forces. Candidates should hold a higher qualification in surgery and have had previous experience in resident hospital posts. Basic salary £475 p.a., but further increments of £25 to a maximum of £550 may be granted at the discretion of the Council. Full residential emoluments valued at £150 are additional to the salary stated. A temporary cost-of-living wages addition amounting, at present, to £60 p.a. in the case of a male officer and £48 5s. p.a. in the case of a female officer is also payable in addition to the salary stated, but will be apportioned as between cash salary and emoluments. The appointment is subject to the Manchester Corporation conditions of service. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

Full information and forms of application may be obtained from the Medical Officer of Health, Hospitals Administration Section, G.P.O. Box 399, Town Hall, Manchester, 2.

Applications for the post must be forwarded to me only, and not to members of the Committee or the Council, not later than 30th August, 1945. Canvassing in any form, oral or written, direct or indirect, is prohibited. PHILIP B. DINGLE, Town Clerk.

Town Hall, Manchester, 2, 2nd August, 1945.

KENT COUNTY COUNCIL. County Hospital, Pembury. (750 Beds.) Applications are invited from registered medical practitioners (Male) for the appointment of HOUSE SURGEON (A). The salary is £200 a year, plus a temporary war addition of £29 19s. 7d., with full residential emoluments. Superannuation can be arranged and the successful candidate will be required to pass a medical examination. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months; otherwise not exceeding 12 months.

Applications should state age, qualifications, experience, and the names and addresses of 2 responsible persons to whom reference may be made as to professional ability, and should be addressed to the County Medical Officer, County Hall, Maidstone, so as to reach him by 28th August, 1945.

W. L. PLATTS, Clerk of the County Council.

County Hall, Maidstone, 2nd August, 1945.

KENT COUNTY COUNCIL. County Hospital, Pembury. (750 Beds.) Applications are invited from registered medical practitioners (Male) for the appointment of REGISTRAR (B1) for Children's Unit. Applicants should have had previous hospital experience. The salary is £350 to £450 a year by increments of £25, with full residential emoluments, plus a temporary war addition at present £29 19s. 7d. a year. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

Applications should state age, qualifications, experience, and the names and addresses of 2 responsible persons to whom reference may be made as to professional ability, and should be addressed to the County Medical Officer, County Hall, Maidstone, so as to reach him by the 28th August, 1945.

W. L. PLATTS, Clerk of the County Council.

County Hall, Maidstone, 2nd August, 1945.

COUNTY BOROUGH OF WALSALL. Manor Hospital. (400 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the following appointments:—

RESIDENT ANÆSTHETIST (B2). The salary is at the rate of £350 p.a., rising by £25 to £425 p.a., with full residential emoluments. R practitioners who now hold A posts may apply, when appointment will be limited to 6 months; otherwise a period not exceeding 4 years.

JUNIOR ASSISTANT MEDICAL OFFICER (A). Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months; otherwise 12 months.

The officers appointed will act under the direction of the Medical Superintendent, and perform such other duties as may be required.

Applications should be sent not later than 31st August, 1945, to: JAMES A. M. CLARK, Medical Officer of Health.

Council House, Walsall.

ROYAL SHEFFIELD INFIRMARY AND HOSPITAL. Royal HOSPITAL UNIT. Applications are invited from registered medical practitioners, Male and Female, for the following appointments, at the Royal Hospital:—

OPHTHALMIC HOUSE SURGEON (A). (This post is recognised for the D.O.M.S.)

ASSISTANT CASUALTY OFFICER (A) with orthopædic duties.

EAR, NOSE, AND THROAT HOUSE SURGEON (A).

Salary is at the rate of £80 p.a., with full residential emoluments. A bonus of £20 will be payable after 6 months' satisfactory service and a further bonus of £10 after a second 6 months' satisfactory service. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointments will be for a period of 6 months; otherwise may be extended.

Applications to be forwarded immediately to—

PERCY N. GLASS, General Superintendent.

OLDHAM ROYAL INFIRMARY. (203 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of DEPUTY RESIDENT SURGICAL OFFICER (B2), to take charge of the Casualty Department and to work under the Orthopædic Surgeon, vacant 24th September. Salary is at the rate of £200 p.a., with full residential emoluments. R practitioners who now hold A posts may apply, when the appointment will be limited to 6 months; otherwise for a period of 12 months.

Applications should be forwarded immediately to—

F. W. BARNETT, General Superintendent and Secretary.

LANCASHIRE COUNTY COUNCIL. Wrightington Hospital, near WIGAN. Applications invited for JUNIOR MEDICAL OFFICER (B2) at the Wrightington Hospital, containing 370 Beds (280 Beds for non-pulmonary tuberculosis [adults and children], 20 Beds for "combined" pulmonary and non-pulmonary cases, and 70 Beds for pulmonary cases). The medical staff consists of medical superintendent, 3 assistants, 2 consultant orthopædic surgeons, other visiting surgeons and visiting physician. Excellent facilities for reading for M.D. Salary £300 p.a., plus bonus, together with board, single quarters, and laundry valued at £146. R practitioners who now hold A posts may apply, when appointment will be limited to 6 months; otherwise 1 year.

Forms of application and conditions of appointment from Central Tuberculosis Officer, County Offices, Preston. Mark letters "Wrightington M.O."

BECKETT HOSPITAL AND DISPENSARY, Barnsley. Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON (A). Salary is at the rate of £225 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when the appointment will be for 6 months.

Applications, stating age, qualifications with dates, nationality, and accompanied by copies of 3 recent testimonials, should be sent immediately to—

ARTHUR L. BOURNE, Secretary-Superintendent.

POOLE JOINT SANATORIUM BOARD. Poole Sanatorium, NUNTHORPE, near MIDDLESBROUGH. (315 Beds.) Applications are invited from registered medical practitioners (Male or Female) for the appointment of JUNIOR ASSISTANT MEDICAL OFFICER (B2). The salary will be £250 p.a., with full residential emoluments, plus war bonus. The Sanatorium is a modern one with facilities for thoracic surgery. R practitioners who now hold A posts may apply, when the appointment will be limited to 6 months; otherwise 1 year.

Applications, stating age, experience, and qualifications, together with the names of 2 persons to whom reference may be made as to professional ability, should be sent to the Medical Superintendent, Poole Sanatorium, Nunthorpe, near Middlesbrough, on or before 30th August, 1945.

2nd August, 1945. G. S. MCINTIRE, Clerk to Board.

THE GENERAL INFIRMARY AT LEEDS. Applications are invited from registered medical practitioners for the post of MEDICAL OFFICER in charge of the Department for Treatment of Venereal Diseases. Consent of the Ministry of Health has been received to the making of this appointment. Candidates must have special experience in the treatment of venereal diseases in accordance with Local Government (Qualifications of Medical Officers and Health Visitors) Regulations, 1930. Salary will be at the rate of £1000 p.a., with the right to engage in private consulting practice in venereal diseases. The successful candidate may also be appointed Clinical Lecturer in Venereal Diseases in the University of Leeds. Suitably qualified practitioners serving with His Majesty's Forces are invited to apply. Canvassing either direct or indirect will be a disqualification.

Applications, giving full particulars and the names of 3 persons to whom reference may be made (or, if preferred, copies of 3 recent testimonials), to be received by the undersigned not later than 30th November, 1945.

S. CLAYTON FRYERS, House Governor and Secretary.

HOVE GENERAL HOSPITAL. Applications are invited from registered medical practitioners, Male or Female, for the appointment of HOUSE SURGEON (B2). Salary at the rate of £200–£250 p.a., according to experience, with full residential emoluments. R practitioners who now hold A posts may apply, when appointment will be limited to six months; otherwise may be extended.

Applications should reach the undersigned as soon as possible, stating when free. The position is now vacant.

J. V. ROE, Secretary-Superintendent.

EAST RIDING COUNTY COUNCIL. Driffield Emergency HOSPITAL. (324 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1), vacant immediately. The Hospital provides experience in general surgery. Salary from £350 to £550 p.a., according to qualifications and experience, together with full residential emoluments. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, qualifications, and previous experience, should be forwarded so as to reach the undersigned as soon as possible. T. STEPHENSON, Clerk of the Council.

County Hall, Beverley, 31st July, 1945.

SURREY COUNTY COUNCIL. Applications are invited from registered medical practitioners, Male and Female, for the appointment of ANÆSTHETIST (B1) at Kingston County Hospital (500 Beds), Wolverton-avenue, Kingston-on-Thames. The position is temporary and is subject to one month's notice on either side. Preference will be given to candidates holding D.A. qualification. Salary is at the rate of £550 p.a., plus war bonus and full residential emoluments. Suitably qualified R practitioners now holding B2 posts, also those holding B1 and rejected by the R.A.M.C., may apply.

Apply to Medical Superintendent by 7th September, 1945.

ROYAL WEST OF ENGLAND SANATORIUM AND E.M.S. HOSPITAL, WESTON-SUPER-MARE, SOMERSET. (172 Beds.) Applications are invited from medical practitioners for the appointment of HOUSE PHYSICIAN (A), duties to commence 1st September. Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when the appointment will be for a period of 6 months.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be addressed to: LESLIE J. FURSLAND, Secretary.

GLOUCESTERSHIRE JOINT BOARD FOR TUBERCULOSIS. STANDISH HOUSE SANATORIUM, STONEHOUSE, GLOUCESTER. (250 Beds with Orthopædic Block.) TEMPORARY ASSISTANT RESIDENT MEDICAL OFFICER (B1) AND ASSISTANT TUBERCULOSIS OFFICER. With the approval of the Minister of Health the Board invite applications from registered Male practitioners for the above joint appointment. In addition to his duties at the Sanatorium the successful candidate will be required to undertake duties at dispensaries, &c. The commencing salary will be at the rate of £450 p.a., plus bonus, and will rise by annual increments of £25 to £600 p.a., plus bonus, with emoluments of a total value of £150, and travelling and subsistence allowances in accordance with the Board's scale will be paid. Candidates should have held a resident hospital appointment and an appointment in some institution recognised for the treatment of tuberculosis. The appointment is subject to the approval of the Minister of Health and will be determined by 3 months' notice in writing on either side, and the person appointed must satisfactorily pass a medical examination. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may also apply.

Applications should be addressed to the Clerk of the Joint Board for Tuberculosis, Shire Hall, Gloucester, and should reach him not later than 24th August, 1945.

GUY H. DAVIS, Clerk of the Joint Board for Tuberculosis.

THE RADCLIFFE INFIRMARY, Oxford, invites applications for the post of TEMPORARY NEUROLOGIST. The holder of the appointment will also be attached, in a consulting capacity, to associated hospitals in the Oxford area, and he will be expected to teach in the Oxford University Medical School. He will also assist the Ministry of Pensions in connexion with a scheme for the treatment and rehabilitation of Service patients suffering from the effects of head injuries. Emoluments, including payments from the Ministry of Pensions supplemented by a contribution from the Nuffield Provincial Hospitals' Trust, will amount to £2000 p.a., with superannuation; private practice for personal gain will not be permitted.

The Nuffield Provincial Hospitals' Trust propose to make a grant in support of research and ancillary services in connexion with the Scheme.

Applicants must be under 50 years of age and preference will be given to those with special experience of head injuries. Applications should reach the Administrator of the Radcliffe Infirmary, Oxford, by 15th September, 1945, accompanied by the names of referees. Applications by cablegram will be accepted from Service personnel.

Further information can be obtained from the Administrator.

THE LEICESTER ROYAL INFIRMARY. (940 Beds.) Vacancies, 1st October, 1945:—

RESIDENT MEDICAL OFFICER (B1). Salary £250.

ORTHOPÆDIC AND FRACTURE HOUSE SURGEON (B2). Salary according to experience with minimum of £200.

2 RESIDENT ANÆSTHETISTS (B2). Salary £150 p.a.

GYNÆCOLOGICAL AND OBSTETRIC HOUSE SURGEON (A). Salary £125 p.a.

CASUALTY OFFICER (A). Salary £150 p.a.

2 HOUSE PHYSICIANS (A). Salary £150 p.a.

OBSTETRIC HOUSE SURGEON (A). Salary £150 p.a. This vacancy is at the Leicester and Leicestershire Maternity Hospital, Causeway-lane, Leicester.

6 months' appointments, all with full residential emoluments.

For the B1 post, suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

For the B2 posts R practitioners holding A posts may apply.

For the A posts, practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Appointments will be made on 5th September, 1945.

Applications should be forwarded on or before the 27th August.

H. T. PLOWMAN, House Governor and Secretary.

3rd August, 1945.

THE LEICESTER ROYAL INFIRMARY. Honorary Assistant SURGEON. The Board invites applications for this position—arisen as the result of the death of the Senior Honorary Surgeon. Candidates must be Fellows or Members by examination of the Royal College of Surgeons of England or graduates in surgery of one of the universities of the United Kingdom or Ireland. Service candidates are eligible to apply for the appointment, which will be made on the 16th January, 1946, on which date candidates will be asked to interview the Board. 100 guineas annually is granted by the Board for out-of-pocket expenses. This matter is under revision.

Applications, with recent testimonials, to reach the undersigned by first post on Saturday, 1st December, 1945.

H. T. PLOWMAN, House Governor and Secretary.

23rd July, 1945.

CAMBORNE-REDRUTH MINERS' AND GENERAL HOSPITAL, REDRUTH, CORNWALL. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), vacant 19th October, 1945. Salary at the rate of £200 p.a., with the usual residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications, together with copies of 3 testimonials, to be addressed to: J. C. FIELD, Secretary-Superintendent.

Redruth, August, 1945.

PAPWORTH VILLAGE SETTLEMENT, near Cambridge. Applications are invited from registered medical practitioners for the post of JUNIOR ASSISTANT MEDICAL OFFICER (B1). Salary at the rate of £300 p.a., rising to £400 by £50 p.a., with full residential emoluments. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

Applications, with copies of 3 recent testimonials, should be sent to the Medical Director, Papworth Village Settlement, Papworth Hall, Cambridge.

WEST RIDING OF YORKSHIRE HOSPITALS BOARD. Pinderfields Emergency Hospital, Wakefield. Applications are invited from registered medical practitioners, Male and Female, for the following appointments :—

HOUSE SURGEON (A), now vacant. The salary, together with full residential emoluments, will be at the rate of £120 p.a. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months ; otherwise not exceeding 1 year.

RESIDENT HOUSE SURGEON (B2), now vacant. The salary, together with full residential emoluments, will be at the rate of £200 p.a. R practitioners who now hold A posts may apply, when the appointment will be limited to 6 months, otherwise 1 year.

The Hospital can accommodate some 1300 Service and civilian patients and, in addition to providing considerable experience in surgical work, has a special Thoracic Surgery and large Orthopædic Centre. The main duties will be undertaken in the Ear, Nose and Throat, Orthopædic and Casualty Departments.

Applications, with full particulars, to be submitted to the Medical Superintendent, Pinderfields Emergency Hospital, Wakefield, forthwith. G. L. BANNER, Clerk of the Board.

Board Offices, Victoria Chambers, Wood-street, Wakefield, July, 1945.

GENERAL HOSPITAL, Nottingham. Ear, Nose, and Throat Department (40 Beds) and large Out-patient Department. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (B2) for the above Department, duties to commence on 1st September, 1945. Salary at the rate of £200 p.a., with full residential emoluments. R practitioners holding A posts may also apply, when appointment will be limited to 6 months.

Applications to be addressed to the undersigned, stating age, qualifications, experience, &c., together with copies of testimonials. HENRY M. STANLEY, House Governor and Secretary.

NOTTINGHAM GENERAL HOSPITAL. (712 Beds, including E.M.S. Beds.) Applications are invited from registered medical practitioners (Male and Female) for the appointment of RESIDENT CASUALTY OFFICER (A) for the above Hospital. Duties to commence about August 19th. Salary at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, House Governor and Secretary.

BRADFORD ROYAL INFIRMARY. Applications are invited from registered medical practitioners (Male, single) for the following appointments :—

HOUSE SURGEON (B2), vacant 1st October, 1945.

HOUSE SURGEON (B2), vacant 17th October, 1945.

HOUSE PHYSICIAN (A), vacant 17th October, 1945.

6 months' appointments. Salary £150 p.a., with full residential emoluments. There are 372 Beds and 8 resident officers. For the B2 posts, R practitioners holding A posts may also apply. For the A post, practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Applications, stating age, nationality, qualifications, and previous experience, with copies of 3 recent testimonials, should be sent immediately to—

H. TRUSSON, House Governor and Secretary.

27th July, 1945.

ROYAL LANCASTER INFIRMARY, Lancaster. (311 Beds.) (Hospital recognised by the Royal College of Surgeons (England) for 2 Senior posts.) Applications are invited from registered medical practitioners, Male and Female, for the post of SECOND HOUSE SURGEON (B2), Orthopædic and Casualty, vacant immediately. Salary £210 p.a., with full residental emoluments. R practitioners holding A posts may apply, when the appointment will be limited to 6 months ; otherwise it may be extended.

Applications should be sent to—

C. H. GRIMSHAW, Superintendent-Secretary.

MANCHESTER ROYAL INFIRMARY. Non-resident part-time CHIEF ASSISTANT to Aural Department. Attendance 5 sessions per week. The Board of Management invite applications for the above appointment from registered medical practitioners, Male and Female. Applicants should have held senior house appointments and had surgical experience. The appointment is for 12 months, subject to the bye-laws as to notice, &c., at a salary of £280 p.a. for 5 sessions per week.

Applications, stating age, nationality, and experience, with copies of 3 recent testimonials, should be sent to the undersigned not later than 27th August, 1945. By Order.

F. J. CABLE, General Superintendent and Secretary.

3rd August, 1945.

ROYAL HALIFAX INFIRMARY. (Class Ia, E.M.S.) (250 Beds.) Applications are invited for the post of RESIDENT SURGICAL OFFICER (B1), Male. Salary £250 p.a., with residence, board, and laundry. Preference given to one holding the F.R.C.S. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, previous experience, and nationality, together with testimonials, should be sent immediately to—

30th July, 1945. A. MIDGLEY, Secretary.

DONCASTER ROYAL INFIRMARY. Applications are invited from registered medical practitioners (Male) for the appointment of SENIOR HOUSE PHYSICIAN (B1). Salary is at the rate of £250 p.a., with usual emoluments. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

Applications, together with copies of 2 recent testimonials, should be forwarded immediately to—

R. LANCASTER, Secretary-Superintendent.

THE ROYAL HOSPITAL, Wolverhampton. (Incorporated under Royal Charter.) The Board of Management invite applications for the post of HONORARY ASSISTANT GYNÆCOLOGIST AND OBSTETRICIAN. Candidates must be Fellows of the Royal College of Surgeons of England (or Edinburgh) and preferably Members of the Royal College of Obstetricians and Gynæcologists, and will be required to confine their private work to consulting obstetrical and gynæcological practice only. The appointment will be for the period of the war in accordance with the B.M.A. recommendation.

Applications should be sent not later than 3rd September to the undersigned, from whom further particulars may be obtained.

2nd August, 1945. W. COCKBURN, House Governor.

LEEDS PUBLIC DISPENSARY AND HOSPITAL. Applications are invited for the post of HONORARY OPHTHALMIC SURGEON. Candidates must be Fellows of the Royal College of Surgeons of England. The appointment to be on a temporary basis during the period of war, and for a period of 12 months thereafter.

Applications, accompanied by copies of 3 recent testimonials, to be addressed to—

CHARLES F. J. MAURY, Secretary and Superintendent.

YORK COUNTY HOSPITAL. (222 Beds.) Applications are invited from registered medical practitioners, Male or Female, for the appointment of HOUSE SURGEON (A), vacant 22nd September, 1945, whose main duties are in the Eye, Ear, Nose, and Throat Department (37 Beds, with busy Out-patient Clinics), but who will share in the general work of the Hospital ; also Casualty Duty. Salary is at the rate of £175 p.a., with full residential emoluments. This post is recognised for D.O.M.S. and D.L.O. examinations. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications to be sent to the undersigned by the 20th August, 1945. J. R. MACKRILL, Secretary.

CAMBRIDGESHIRE COUNTY COUNCIL. County Hospital. Applications are invited for the following posts at the above Hospital :—

RESIDENT OBSTETRIC OFFICER (B2). The appointment is limited to 6 months. Salary is at the rate of £250 a year, with full residential emoluments. R practitioners holding A posts may apply.

HOUSE PHYSICIAN (A). Salary £150 a year, with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months ; otherwise not exceeding 1 year.

Applications, with copies of recent testimonials, should be sent at once to the Clerk of the Cambridgeshire County Council, Shire Hall, Castle Hill, Cambridge.

31st July, 1945.

PRESTON ROYAL INFIRMARY. Applications are invited from Male and Female registered medical practitioners for the following appointments :—

HOUSE SURGEON (A). Recognised for F.R.C.S. Examination by R.C.S.

HOUSE SURGEON (A) to Ophthalmic and Aural Departments. Special wards and clinics.

Duties under Specialist Surgeons. Salary in each case £150 p.a., with usual residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointments will be for 6 months.

Applications, stating age and qualifications, to be addressed to the Superintendent.

PRESTON ROYAL INFIRMARY. Applications are invited for the post of CASUALTY OFFICER (B2) in busy department, vacant 20th August, from registered medical practitioners. Salary £200 p.a., with full residential emoluments. R practitioners now holding A posts may apply, when the appointment will be for 6 months.

Applications to be sent to the Superintendent.

DERBYSHIRE ROYAL INFIRMARY, Derby. (Voluntary Hospital —416 Beds, plus 115 E.M.S.) Applications are invited from registered medical practitioners, Male or Female, for the appointment of ACCIDENT AND CASUALTY OFFICER (A). Duties will be in the Casualty Department, Hand Clinic, and Accident Wards. The position is now vacant. Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when the appointment will be for a period of 6 months.

Applications should be sent as soon as possible.

ARTHUR TAYLOR, Superintendent and Secretary.

PETERBOROUGH AND DISTRICT MEMORIAL HOSPITAL. (154 Normal Beds, E.M.S. Beds 75 : total 229.) Applications are invited for the post of RESIDENT SURGICAL OFFICER (B1) as from the 1st September, 1945. Salary at the rate of £350 p.a., with board and lodging. Suitably qualified R practitioners holding B2 posts, also those holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, nationality, qualifications with dates, and details of experience, together with copies of 2 recent testimonials, should be sent immediately to—

F. A. C. TAYLOR, House Governor and Secretary.

HULL ROYAL INFIRMARY. Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1), vacant September. Preference will be given to candidates holding diploma of F.R.C.S. The holder of the post will be required also to undertake temporarily the duties of Senior House Surgeon. Salary £250 p.a., with full residential emoluments. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

Applications to : R. J. CARLESS, House Governor.

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WALSALL GENERAL HOSPITAL. (181 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of CASUALTY OFFICER AND ORTHOPÆDIC HOUSE SURGEON (B2). Salary is at the rate of £200 a year, with full residential emoluments. R practitioners who now hold A posts may apply, when the appointment will be limited to 6 months.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be forwarded immediately to—

W. H. HARPER, Honorary House Governor.

BURTON-ON-TRENT GENERAL INFIRMARY. (200 Beds, Normal.) Applications are invited from registered medical practitioners for the appointment of CASUALTY OFFICER AND HOUSE SURGEON (A). Salary at the rate of £200, with the usual residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, stating qualifications, age, and nationality, and accompanied by copies of 3 testimonials, to be sent to the Secretary-Superintendent.

ROYAL SHEFFIELD INFIRMARY AND HOSPITAL. Royal HOSPITAL UNIT. Applications are invited from registered medical practitioners for the appointment of RESIDENT CASUALTY OFFICER (B1) at the Royal Hospital. Salary is at the rate of £150 p.a. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

Applications, with testimonials, to be forwarded to—

PERCY N. GLASS, General Superintendent.

SCARBOROUGH HOSPITAL, Yorkshire. (Normally 140 Beds.) Applications are invited from Female registered medical practitioners for the post of HOUSE SURGEON (A). The appointment is for 6 months, commencing 1st August, 1945, and the salary is at the rate of £175 p.a., with board, residence, laundry, &c. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply.

Applications, with age, testimonials, qualifications, &c., to be sent immediately to the Secretary.

KETTERING AND DISTRICT GENERAL HOSPITAL. Applications are invited from registered medical practitioners, Male or Female, for the appointments of HOUSE SURGEON (A) and HOUSE PHYSICIAN (A), now vacant. Salary is at the rate of £250 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointments will be for a period of 6 months.

G. W. JACKSON, Secretary-Superintendent.

NORTH STAFFORDSHIRE ROYAL INFIRMARY, Stoke-on-Trent. Applications are invited from registered medical practitioners, Male and Female, for the post of HOUSE SURGEON (B2) to Ear, Nose, and Throat and Eye Departments. Salary is at the rate of £185 p.a., with full residential emoluments. R practitioners holding A posts may apply, when appointment will be for a period of 6 months.

Applications to be sent as soon as possible to the House Governor.

SOUTHEND GENERAL HOSPITAL. Applications are invited from registered practitioners for the post of RESIDENT ANÆSTHETIST (B2). Salary will be at the rate of £200 p.a., with full residential emoluments. This post is recognised for the Diploma in Anæsthetics. The post falls vacant on or about the 1st September. R practitioners holding A posts may also apply, when the appointment will be limited to 6 months.

Applications, stating age, qualifications, and experience, together with copies of 2 recent testimonials, to be sent immediately to—

P. H. CONSTABLE, House Governor and Secretary.

SOUTHAMPTON CHILDREN'S HOSPITAL. (55 Beds.) Applications are invited from registered medical practitioners, Men or Women, for the appointment of RESIDENT MEDICAL OFFICER (B2), now vacant. Salary is at the rate of £200 p.a., with full residential emoluments. R practitioners holding A posts may apply, when appointment will be limited to 6 months.

Applications, stating age, qualifications with dates, and nationality, and accompanied by 3 testimonials, should be sent immediately to: ELLA K. MATTHEWS, Secretary.

CITY AND COUNTY OF NEWCASTLE UPON TYNE. Shotley BRIDGE EMERGENCY HOSPITAL. (900 Beds.) Applications are invited from registered medical practitioners, Male or Female, for the post of HOUSE SURGEON (B2) to the Department of Thoracic Surgery. The appointment is tenable for a period of 6 months and salary is at the rate of £250 p.a., plus cost-of-living bonus and full residential emoluments. R practitioners now holding A posts may apply.

Applications to be forwarded immediately to the Medical Officer of Health, Town Hall, Newcastle upon Tyne, 1.

VICTORIA HOSPITAL, Burnley. (183 Beds.) Applications are invited from registered medical practitioners for the appointment of HOUSE PHYSICIAN (A), now vacant. Salary at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for a period of 6 months.

Applications should be sent to: J. E. WHEATCROFT, Secretary.

THE SUSSEX MATERNITY HOSPITAL, Buckingham-road, BRIGHTON. (65 Beds and Districts.) HOUSE SURGEON (B2) required immediately. Appointment for 6 months. Salary £250 p.a. R practitioners holding A posts may apply.

Apply, with testimonials, to Secretary.

ALTRINCHAM GENERAL HOSPITAL, near Manchester. (100 Beds.) Applications are invited from registered medical practitioners, Male or Female, for the appointment of HOUSE SURGEON (B2). Salary at the rate of £150 p.a., with full residential emoluments. R practitioners now holding A posts may apply, when appointment is limited to 6 months.

Address applications to the General Superintendent.

HUDDERSFIELD ROYAL INFIRMARY. (321 Beds.) Casualty OFFICER (B2) required to commence immediately. Salary at the rate of £200, with full residential emoluments. R practitioners who now hold A posts may apply, when appointment will be limited to 6 months.

Applications should be sent as soon as possible to—

H. J. JOHNSON, General Superintendent and Secretary.

SUTTON AND CHEAM GENERAL HOSPITAL, Sutton, Surrey. (117 Beds.) Applications are invited from registered medical practitioners, Male or Female, for the appointment of RESIDENT MEDICAL OFFICER (B2), vacant 15th September. The appointment will be limited to 6 months. The salary is at the rate of £200 p.a., with full residential emoluments. R practitioners who now hold A posts may apply.

Applications, stating age, qualifications with dates, and nationality, and present post, and accompanied by copies of 3 recent testimonials, should be sent to the Secretary not later than 31st August, 1945.

SALISBURY GENERAL INFIRMARY. Senior Radiographer required, to fill immediate vacancy. M.S.R. Non-resident. Salary in accordance with B.H.A. scale, together with lunch and tea.

Applications, giving full particulars of training, experience, &c., to be forwarded as soon as possible to—

JOHN WILLIAMS, Superintendent and Secretary.

UNIVERSITY OF ABERDEEN. Assistant in Anatomy. An Assistant is required in the Department of Anatomy in the University of Aberdeen, to commence duty on 1st October, 1945. Salary £300–£350, according to experience and qualifications.

Applications, with 1 name for reference, to be submitted by 15th September, 1945, to: H. J. BUTCHART, Secretary.

The University, Aberdeen.

PRISON SERVICE. Medical Staff. Applications are invited for the post of Woman MEDICAL OFFICER at H.M. Prison, Holloway, London, to assist the other Medical Officers. Salary is £650 p.a., plus a temporary war bonus of (at present) £48 p.a. Annual leave normally 6 weeks, but restricted at present to 24 days. The post is unestablished but this will be subject to review after the war.

Forms of application may be obtained from the Prison Commission (Establishment Branch), Kensington Mansions, Trebovir-road, Earls Court, London, S.W.5.

ST. JOHN OPHTHALMIC HOSPITAL, Jerusalem. The post of SUB-WARDEN is vacant and applications are invited for filling the post.

Candidates should write in the first instance, stating qualifications, to the Hospitaller, Order of St. John, who will give full particulars regarding salary, &c. Address: 12, Grosvenor-crescent, London, S.W.1.

AUCKLAND HOSPITAL BOARD, New Zealand. Applications addressed to the undersigned and closing at NOON on Monday, 17th September, 1945, are invited from registered medical practitioners for 2 appointments as SENIOR RADIOLOGISTS at the Board's Institutions, at commencing salaries of £1000 p.a., rising by 2 annual increments of £100 to £1200 p.a. (living out), New Zealand currency. Applicants must hold a Diploma in Radiology. The appointments are whole-time and are for Diagnostic Radiology only. The Board's Institutions include: (1) The Auckland Hospital of 1000 Beds (with a Director of Radiology and an Assistant Radiologist already appointed). (2) The Green Lane Hospital of 600 Beds, including a Chest Diseases Department. (3) The Middlemore Hospital of 300 Beds, including an Orthopædic Department. New X-ray Departments are being opened in the two latter hospitals this year. Conditions and memorandum of appointment may be obtained from the office of the High Commissioner for New Zealand, The Strand, London.

Application should be endorsed "Senior Radiologist," and sent to New Zealand direct by air mail.

R. F. GALBRAITH, Secretary.

Assistant Dietitian required to work in Special Diet Kitchens.—Apply, Lady Superintendent, Bradford Royal Infirmary.

Wanted, Assistant for General Practice.—Apply Drs. Collis and GOLDSMITH, The Green, Newark, Notts.

M.R.C.S., L.R.C.P., Group I, just released, willing to undertake temporary relief duties evenings and week-ends, London.—Address, No. 672, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Medical Consultant required for 1 or 2 days weekly. Experience and interest in Mental Deficiency work essential.—Apply: GUARDIANSHIP SOCIETY, 3, Buckingham-place, Brighton.

Lady Dispenser, Secretary, Book-keeper wanted end August. Good salary.—Apply: Dr. THORN, 28, College-road, Harrow.

Practice for Sale at Bolton, excellent opening. Price, 1 year's purchase. Panel 1900. House for sale or rent.—Address, No. 673, THE LANCET Office, 7 Adam-street, Adelphi, London, W.C.2.

Practice for Sale, pleasant north Lancs town, panel over 2000. Price, including book debts, £3500. House for sale. Price £2000. Address, No. 674, THE LANCET Office, 7 Adam-street, Adelphi, London, W.C.2.

Death Vacancy Practice, Stoke-on-Trent. Panel 432. House to rent, £85. Address, No. 675, THE LANCET Office, 7 Adam-street, Adelphi, London, W.C.2.

Death Vacancy, North Wales, country Practice, price £800. Panel 700. House for sale, price £1500. Address, No. 676, THE LANCET Office, 7 Adam-street, Adelphi, London, W.C.2.

Excellent Practice for Sale, Leeds. Panel 2300 (approximately). Price required £5500, 1½ years' purchase. House to rent, £90. Address, No. 677, THE LANCET Office, 7 Adam-street, Adelphi, London, W.C.2.

Garage for 2 Cars to Let, Wimpole-mews.—Apply: Kingsley, 13, Wimpole-mews, London, W.1. Tel.: WELbeck 3236.

Medical Photographs and Drawings for illustrations, records, &c. —Write for particulars: E. O. SONNTAG, 159, Bickenhall Mansions, Baker-street, W.1. WELbeck 8860.

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